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INTERNATIONAL ABSTRACT OF SURGERY

JANUARY, 1933

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Gosset, A, Bertrand, I, and Funck-Brentano, P
Mixed Tumors of the Submaxillary Gland (Les
tumeurs mixtes de la glande sous-maxillaire) *J de
chir*, 1932, xl, 161

The authors report 4 mixed tumors of the submaxillary gland which were found in 17,924 patients operated upon at the Salpêtrière during the period from January 1, 1920, to December 31, 1931. They quote Willis and Wilson, who reported a ratio of 50 mixed tumors of the parotid to 6 mixed tumors of the submaxillary gland, and Heinecke, who found that 17 per cent of 360 salivary gland tumors were mixed tumors of the submaxillary gland.

Mixed tumors of the submaxillary gland are more frequent in women than in men. Of the patients whose cases are reviewed by the authors, 3 were women who had harbored the tumors for three, ten, and eleven years respectively, and 1 was a man who had noticed the tumor only two months before seeking treatment.

The only constant sign is the presence of the tumor. Physical examination reveals at the site of the submaxillary gland, a painless, movable, and firm but elastic neoplasm which is not attached to the skin. In older tumors a cartilaginous and a pseudo-fluctuant sensation are sometimes noted on palpation. Buccal palpation demonstrates that Wharton's duct is not involved.

The differentiation from thyroglossal cysts, adenitis, malignancy of the lymphatics, and branchial tumors is readily made from the history and the findings of physical examination. Differentiation from stone in Wharton's duct, a solitary tuberculous lymph node, and syphilis of the submaxillary gland is more difficult.

The tumors are generally benign. According to Kuttner, only 1 in 10 is malignant. Malignant degeneration is suggested by increased hardness, loss of mobility, and rapid growth. Pathological examination shows the tumor to be well encapsulated, and

generally reveals a definite plane of cleavage between the gland and the tumor. When the tumor is cut the surface is pale and bulges. Histological examination discloses irregular patterns of connective tissue, epithelial elements, squamous cells, epithelial pearls, pseudoglandular arrangements, and areas of undifferentiated cells.

The treatment is surgical. As a rule the tumor may be enucleated. When it is incorporated within the gland so that its removal is difficult, extirpation of the gland is advisable. Ligation of the duct is indicated to prevent the formation of a salivary fistula. The authors warn against removing the neoplasm through the floor of the mouth on account of technical difficulties and the danger of infection.

JAMES B. MASON, M.D.

Kegel, R. F. C. Adamantine Epithelioma. *Arch Surg*, 1932, xiv, 498

Adamantine epithelioma has long been recognized as an entity. It occurs more frequently in the lower jaw than the upper jaw, and is most common in the colored race. It usually appears between the ages of eleven and thirty-five years, the period in which eruption of the molar teeth occurs and the incidence of the dentigerous cyst is highest. Its frequency in males and females is approximately the same.

The growth of the adamantinoma is usually slow. The tumor causes a lobulated swelling of the jaw extending outward. It encroaches little on the buccal cavity, but may rupture into the mouth with the discharge of fluid and the formation of a fistula which usually persists. The skin over the tumor is not adherent. In the upper jaw extension into the antrum is almost inevitable.

The roentgen appearance of adamantine epithelioma of the lower jaw is that of an expansive central bone tumor. The lesion may be monocystic or polycystic. There is no periosteal reaction. Large dental root cysts, dentigerous cysts, giant-cell tumors, and central fibromata may produce a roentgen picture which cannot always be distinguished from that of

adamantine epithelioma. In cases of adamantinoma of the upper jaw the roentgenogram is of little diagnostic aid.

Pathologically the tumors may be divided into two groups, the cystic and the solid, although there is no sharp differentiation between the two and on section some of the solid tumors show cysts of varying size. The solid ones are composed of a friable cellular tissue and the glistening, smooth cysts are filled with a creamy or a watery fluid and occasionally show papillomata projecting from their walls. The largest tumors are polycystic. The cystic lesions are more apt to recur than the solid growths.

The microscopic picture of adamantinoma is not constant. The fundamental cell is the basal cell, but all degrees of differentiation of the enamel organ are found. Depending on the degree of differentiation, the tumors may be divided into two groups, those of the adult form, which are the more frequent, and those of the undifferentiated form, in which only basal cells are seen. Between these two groups there are transitional forms. The stroma of the adamantinoma shows no constant morphology. Its quantitative proportion to the epithelial elements varies widely. The presence of adamantinoma epithelium in the monocystic lesion is diagnostic of adamantinoma and rules out the dentigerous and the root cyst.

The origin of the adamantinoma is still in dispute. According to one theory it is the 'parodontal epithelial debris' of Malassez according to another the oral epithelium, and according to third, the enamel organ itself. Most of the evidence seems to support the third theory.

The adamantinoma is a recurrent tumor. From a consideration of the operative results it appears that when there is a monocystic or a solid lesion with an intact bone shell the operation of choice is curettage followed by chemical and thermal cauterization, but when the tumor is polycystic, partial or total resection of the jaw is advisable. As the adamantinoma is resistant to irradiation, the X-rays and radium have proved of little value in its treatment.

WILLIAM C. HANCOCK, M.D.

BYE

Freysburger E. Dissemination of Sarcoma of the Eye. (Zu Disseminierung des Sarkoms des Auges.) *Ztschr. f. ophth.* 1912, 71, 11, 8.

A pigmented sarcoma of the nasal half of the iris developed in a sixty year-old woman. Examination with the slit lamp revealed grayish white and light brown cells with long processes on the anterior capsule. On anatomical examination of the enucleated eyeball the anterior surface of the iris and the exposed part of the ciliary body in the angle of the chamber were also found covered by a sarcomatous growth. On the anterior capsule in the vicinity of the tumor of the iris were pigmented cross sections of pigmented cells, some of which showed long processes.

The author discusses the clinical differences between the appearance of these sarcoma cells on examination with the slit lamp and that of similar branched cells left behind as remains of the pupillary membrane or after subsidence of an iridocyclitis. A case with cells of the latter type is reported with an illustration.

Dissemination of tumor cells is very rare in sarcoma of the choroid, more frequent in tumors of the ciliary bodies, and most frequent in tumors of the iris. In the latter it is almost constant. As dissemination can take place only when the tumor borders on a space filled with fluid, in cases of involvement of the ciliary body the epithelium would have to be ruptured first. In sarcoma of the choroid, dissemination occurs in the subretinal space after separation of the retina and therefore is not perceptible clinically.

It is particularly difficult to determine the relation between sarcoma of the conjunctiva to black flecks in the mucous membrane which may arise in the course of the disease. In a woman thirty-eight years old a yellowish-brown spot appeared in the inner angle of the right eye and enlarged greatly. In addition, two ink black spots appeared in the upper fornix. On the tarsal conjunctiva there was a mushroom-shaped, reddish tumor the size of an apple seed which on biopsy was found to be a sarcoma. As the black spots on the conjunctiva and the margin of the lid were believed to be sarcomatous too, the eyeball was enucleated. However, anatomical examination showed that only the nodule in the upper conjunctival fold was sarcomatous. Some of the black spots were simple pigmentations of the basal-cell layers of the mucous membrane and the intermarginal portion and others were naevi without definite signs of malignancy. Particularly noteworthy was the presence of pigment and remarkably large, coarse pigment cells in the basal cell layers of the otherwise entirely normal epithelium of the cornea. Here and there, between the latter and Bowman's membrane, were oddly shaped, flattened, coarse cells with long processes.

The cases of sarcoma of the conjunctiva reported in the literature up to 1908 are tabulated to supplement Schiller's statistics for the period from 1808 to 1918.

The author then discusses the occurrence of black spots on the mucous membrane at a distance from the tumor in sarcoma of the conjunctiva, the interpretation of pigmentation of the corneal epithelium, and the nature of the pigment cells. He agrees with Schiller that the pigment flecks are due to irritation produced by the sarcoma. The irritation which caused the embryonal anlage to develop into sarcoma may at the same time have caused naevi already present to become pigmented or may have led directly to the formation of naevi. In the literature the author has found the reports of three cases of corneal pigmentation with sarcoma of the conjunctiva but they differed in important particulars. In his own case it was impossible to decide whether the pigment was taken up out of the conjunctival

sac or was formed in the cells themselves. The pigment cells on Bowman's membrane might be interpreted as chromatophores which wandered in from the conjunctiva or as sarcoma cells. Sternberg accepts the first interpretation, but the author points out that cells of like appearance are scarcely ever found in the conjunctiva in the vicinity of the limbus. Fuchs has not seen such cells below the epithelium in any disease. It would be difficult to explain why such connective tissue cells should grow into the cornea from the entire limbus. At any rate, our knowledge of the dissemination of sarcoma in the interior of the eye leads the author to assume a similar wandering of the cells in the conjunctival sac.

GINSBERG (O)

Márquez Concerning the Argumosa-Dieffenbach Operation (Sobre la operación de Argumosa-Dieffenbach) *Actas Soc. de ciruj. de Madrid*, 1931, 1, 81

Márquez reports a case in which blepharoplasty was done and shows a photograph of the final result. The lesion was diagnosed microscopically as a squamous-celled carcinoma. It was the size of a hazelnut and situated on the outer half of the lower lid.

This case is reported to bring up a discussion of the originator of blepharoplasty. In the opinion of the author and others, Don Diego de Argumosa, not Dieffenbach, was the first to describe it. Another Spaniard to contribute to the development of the operation was Hysern. In 1834 Hysern published a treatise on blepharoplasties in which he mentioned and illustrated the operation of Argumosa. Argumosa's work was done in 1832 and reported in 1833, whereas Dieffenbach's publication appeared in 1835.

Márquez reprints Argumosa's case report and the illustrations of his plaster casts. The lesions in Argumosa's case were a large one around the inner canthus and a small spot on the nose. Following complete excision, a flap taken from the rest of the lid and a part of the cheek over the zygoma was turned over the defect.

Márquez has changed the technique only slightly, and uses it in ectropion. He states that the free tarsal border should always be preserved if possible.

JAMES B. BROWN, M.D.

Gifford, S. R., Lebensohn, J. E., and Puntenny, I. S. Biochemistry of the Lens. I. Permeability of the Capsule of the Lens. *Arch. Ophth.*, 1932, viii, 414.

The authors' findings in extensive experimentation with regard to the biochemistry of the lens and their conclusions therefrom are summarized as follows:

1 The normal capsule is freely permeable to water, electrolytes, and substances of higher molecular weight such as sodium salicylate and fluorescein.

2 In experiments with sodium salicylate, diffusion into the lens was the same with and without the capsule.

3 With substances of a larger molecular weight, albumin, glutathione, and globulin, a certain barrier

to dialysis is formed by the capsule of the lens. Since albumin may be detected after dialysis for two hours, it is probable that some albumin passes through the normal capsule. However, the amount is so minute that equilibrium is maintained between the aqueous and the lens substance. Apparently no globulin passes through the capsule until postmortem changes have occurred.

4 That postmortem changes were not responsible for the absorption of sodium salicylate and fluorescein is proved by the experiments in which these substances were given during life.

5 Young lenses were shown to be definitely more permeable to the substances tested than normal lenses of older animals. The difference was slight in substances dialyzing from within the lens out, but marked for sodium salicylate and fluorescein.

6 In five cataractous lenses from human beings extracted within the capsule, permeability of the capsule for various substances was approximately the same as that of the normal rabbit lens.

7 No evidence of "selective permeability" was found, the only factor influencing permeability being the molecular size of the substances tested.

8 Within a range much greater than that possible during life, variations of neither osmotic pressure nor hydrogen-ion concentration were effective in producing cataract *in vitro*. This seems to invalidate the assumption of Duke-Elder that these factors are of importance in the genesis of cataract. In view of the work of Vogt and others previously cited, the other factor which Duke-Elder regarded of importance, ultraviolet rays, need not be considered.

9 The fact that sodium salicylate did not penetrate the nucleus of normal beef lenses until after twenty-four hours in the incubator indicates the sluggish metabolism of this portion of the lens, which may be considered a factor in the genesis of nuclear sclerosis.

10 In mature naphthalene cataract no increase in permeability of the capsule was found. The swelling of the lens in this condition can be due only to the absorption of water induced by an increased osmotic pressure of the lens substance. This is apparently the result of the breaking down of the lens proteins into substances of smaller and more numerous molecules. It seems to offer a satisfactory explanation of the findings of Schmerl and Thiel, as such a breakdown would involve more active oxidative processes. The finding of a positive reaction to sodium nitroprusside in the aqueous of such lenses and of an increase in organic matter escaping through the capsule during the incipient stage of naphthalene cataract may be explained by the freeing of glutathione and other substances in the processes of decomposition. This is in line with the swelling observed in the intumescent stage of senile cataract and the loss of solids in this and later stages.

11 In view of our findings, the degenerative changes shown by histological methods in the capsule of naphthalene cataract do not indicate increased permeability.

12. In view of the foregoing findings with respect to the permeability of young and old lenses and lenses with experimental cataract, any theory of the genesis of cataract based on increased permeability of the capsule seems to be without foundation. Traumatic cataract, which is used as an example in favor of this theory, may be considered a swelling and separation of the lens fibers deprived of the covering that normally holds them in close apposition, allowing them to absorb more water and permitting the loss of their globulin content. In this condition there is no question of increased permeability of the capsule, but a loss of part of the capsule itself.

LESLIE L. MCCOY M.D.

Jaensch, P. A. Difficulties and Errors in the Diagnosis of Sarcoma of the Retina. Clinical and Anatomical Observations on Tumor Tenonitis and Angioma of the Retina (Schwierigkeiten und Irrtümer bei der Diagnose des Aderhautsarcoms. Klinische und anatomische Beiträge zur Tumorenkunde und zum Angiom der Aderhaut). *Klin. Wochenschr.* August 1932, XXXVII, 6.

The difficulties and errors in the diagnosis of sarcoma of the retina have been pointed out at various times (Reis, Jann, Sattler). They are not very serious in blind eyes, although we know that for a complete cure (without later metastases) the prognosis is much better the earlier enucleation is carried out.

In five cases the diagnosis presented considerable difficulty as there were symptoms of tenonitis (Birch-Hirschfeld) via moderate exophthalmos, chemosis, and interference with the painful movements of the eyes. Clouding of the cornea, exudate hemorrhages into the anterior chamber, papillary induration and cataract rendered ophthalmoscopic examination impossible. In the first case, in which the condition was believed to be a peritheloma, alcohol was injected. The infiltration of the sclera and the inner layers of Tenon a capsule indicated a permanent tenonitis which usually is not found after injections of alcohol. In four cases of tumor some of the vessels contained thrombi and there were large hemorrhagic spaces the origin of which is not yet clear. None of the cases showed sclerectasis, but diffuse infiltrations of the sclera were found in the vicinity of the necrotic foci of the tumor. The toxic substances liberated by the disintegration of the tumor exerted an irritating and injurious effect on the vascular walls, while the necrosis itself was the result of insufficient nutrition. The prognosis in such cases is no more serious than that of other ocular tumors. The other eye always remains normal.

In the sixth case enucleation was performed on a woman of sixty years on the suspicion of sarcoma. The blackish-brown tumor 10 mm. long and from 1 to 1.5 cm. thick was located usually to the papilla and proved to be an angioma simplex over which the retina was transformed into a multilocular cyst. Unfortunately such errors are not rare. Nevertheless eyes with angioma must finally be enucleated because of painful blindness.

P. WACKENHUT (O).

Devia, W. T. Metastatic Carcinoma of the Optic Disk, with the Report of a Case. *Arch. Ophth.* 1932, VII, 226.

It is estimated that 30 per cent of all cancer metastasize, and that 4.77 per cent involve the central nervous system. According to some investigators, about one-half of the metastases to the central nervous system arise from primary cancers of the breast, lung, and prostate and the next greatest number from primary cancer of the uterus.

When metastasis occurs by way of the lymphatics, the meninges are more apt to be involved.

Retrograde extension, first emphasized by von Recklinghausen, is a frequent means of extension of cancer and occurs especially in organs having a venous pulse.

Metastasis to the central nervous system may occur at any time, even years after the appearance of the cancer or the operation on the primary tumor, and even before the primary growth is suspected. In cases with symptoms of tumor of the brain or symptoms of involvement of this organ by a disease process the possibility of a metastasis from an as yet unrecognized cancer of the prostate, lung, or breast should be considered.

The case reported by the author was that of a woman thirty-one years of age who presented herself in June, 1930, complaining of severe headaches which had begun six months previously. These had become progressively worse and recently had been accompanied by vomiting. One year previously the patient had been operated upon for scirrhous cancer of the right breast. The lymph nodes of the axillary region were involved. According to a consultant's report in May 1930, the left eye showed a large, elevated whitish area overlapping about half the diameter of the disk and extending several disk diameters into the adjacent fundus. This was best seen with a +6 lens. Transillumination was negative. The right eye was essentially negative.

General examination revealed chronic cholecystitis, a psychoneurosis of the anxiety type, secondary anemia, and laceration of the cervix with erosion.

Vision was 20/5 in both eyes with a moderate myopic correction. There was some involvement of the peripheral fields but not of the central fields. The left blind spot was definitely enlarged. The right pupil measured 3 mm. and the left, 4 mm. Both pupils reacted normally to light and accommodation. The extra-ocular muscles were normal. The right eye was negative except for some old choroidal spots. In the left eye the temporal half of the disk was normal. The nasal half was elevated 6 diopters and separated from the normal temporal half sharply by a perpendicular wall. The elevation extended into the retina above the disk 5 disk diameters and sloped off to the normal retinal level gradually. Nasally, it extended 8 disk diameters and sloped gradually to the normal retinal level. Below it extended 4 disk diameters and dropped off rather sharply to the retinal level. Its surface was

grayish white The vessels over this area appeared to be normal Transillumination was of no use

The patient died in November, 1930 Autopsy was not obtainable The clinical diagnosis was carcinoma of the intra-ocular portion of the ocular nerve
 LESLIE L. MCCOY, M D

MOUTH

Berven, E Irradiation Treatment of Malignant Tumors of the Buccal Cavity (*Le traitement radiologique des tumeurs malignes de la cavité buccale*) *Acta radiol*, 1932, xii, 213

In the irradiation treatment of carcinoma of the oral cavity now being used at Radiumhemmet a combination of radium irradiation and endothermy is employed for the primary tumor and a combination of radium irradiation and conservative surgery for the lymph-node areas

Radium has proved superior to the quality of roentgen irradiation as yet available

The greatest advance in therapeutic technique in recent years has been due to the introduction of the teleradium technique and the more general use of the interstitial implantation of radium needles in combination with endothermy

The teleradium technique permits an increase in the quantity of the irradiation and in the tissue doses, factors which greatly increase the effective action of the irradiation

The interstitial implantation of radium needles completes or supplements the dose given previously by the teleradium treatment

Endothermy removes any resistant tumor remnants without causing bleeding and without the risk of local re-implantation or spread of the tumor

The treatment of the primary tumor consists routinely of an initial teleradium treatment followed, after the tumor has become clean, smaller, and better delimited, by endothermy by the simultaneous interstitial implantation of radium needles around the coagulated area

The treatment of the lymph-node area consists in the application of teleradium simultaneously with treatment of the primary tumor If any movable, easily operable glandular metastases remain, surgical dissection is done after the teleradium treatment Otherwise only teleradium is used

In the eleven-year period from 1916 to 1926 the final result was healing for five years or more in 32 per cent of cases of lingual cancer, 34 per cent of cases of sublingual cancer, 18 per cent of cases of cancer of the mandible, and 26 per cent of cases of buccal cancer Of 278 patients suffering from carcinoma of the oral cavity, 76 (27 per cent) were free from symptoms for from five to eleven years

Of 28 patients treated for epithelioma of the tonsils with the old technique in the period from 1919 to 1924, primary healing was obtained in 25 per cent and cure for a year in 10 per cent

Of 18 patients treated for epithelioma of the tonsils in the period from 1924 to 1927 with the new

technique, 55.6 per cent became primarily healed and 39 per cent were free from symptoms after three years

Of 35 patients suffering from sarcoma of the tonsils who were treated in the period from 1916 to 1927, primary healing was obtained in 71.4 per cent, 48.6 per cent were free from symptoms for one year, and 36.7 per cent were free from symptoms for five years

Houser, K M Ludwig's Angina Intra-Oral Incision in Infections of the Floor of the Mouth
Arch Otolaryngol, 1932, xvi, 317

Ludwig's angina is not a common disease Among 18,705 patients treated on the general surgical service of the hospital of the University of Pennsylvania in the period from 1922 to 1930, it was found in only 12

The condition undoubtedly begins as an inflammatory reaction in the floor of the mouth It is a cellulitis The submandibular involvement is a later manifestation of spread by contiguity

The disease is most common in young adult males The usual cause is dental caries

Two of fifteen cases reported were treated by intra-oral drainage The mucosa was incised at the point of greatest swelling, which was at about the level of the second molar tooth and half way between the frenum and the alveolar ridge, a hamostat was inserted, and the opening then dilated If the involvement has extended into the neck, an external operation will be necessary

GEORGE A. COLLETT, M D

NECK

John, H J Hyperthyroidism Showing Carbohydrate-Metabolism Disturbances Ten Years' Study and Follow-Up of Cases *J Am M Ass*, 1932, xcix, 620

The occurrence of glycosuria and hyperglycemia in cases of hyperthyroidism has frequently been reported The average incidence of true diabetes in hyperthyroid patients is 2.3 per cent, whereas the incidence of hyperthyroidism in diabetics is 1.68 per cent Of 9,000 patients with thyroid disease who were studied in the Cleveland Clinic, 620 (6.88 per cent) had non-physiological hyperglycemia on one or more occasions In approximately 200 (2.1 per cent) of these the hyperglycemia persisted and resembled that of diabetes There was no parallel between the degree of the diabetes and the severity of the hyperthyroidism After operation for the hyperthyroidism the diabetes improved in 55 per cent of the patients remained stationary in 15 per cent, and became worse in 30 per cent Of the entire group of patients, 35.7 per cent are still taking insulin

The incidence of diabetes in hyperthyroid patients is twice the incidence of diabetes in normal persons The author believes that a "diabetic anlage" is present, and that the hyperthyroidism acts to elevate

18 In view of the foregoing findings with respect to the permeability of young and old lenses and lenses with experimental cataract, any theory of the genesis of cataract based on increased permeability of the capsule seems to be without foundation. Traumatic cataract, which is used as an example in favor of this theory may be considered a swelling and separation of the lens fibers deprived of the covering that normally holds them in close apposition, allowing them to absorb more water and permitting the loss of their globulin content. In this condition there is no question of increased permeability of the capsule, but a loss of part of the capsule itself.

LARRY L. MCCOY, M.D.

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In the sixth case enucleation was performed on a woman of sixty years on the suspicious of sarcoma. The blackish-brown tumor 10 mm. long and from 1 to 1.5 cm. thick was located nasally to the papilla and proved to be an angioma simplex over which the retina was transformed into a multilocular cyst. Unfortunately such errors are not rare. Nevertheless eyes with angioma must finally be enucleated because of painful blindness. P. WATKINS (C)

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SURGERY OF THE CHEST

CHEST WALL AND BREAST

Haagensen, C D Xanthoma of the Breast *Am J Cancer*, 1932, xvi, 1077

This report is based on 3 cases of xanthoma of the breast which were found among approximately 900 cases of breast tumor in which the pre-operative diagnosis was carcinoma.

Xanthomata are probably not true neoplasms. They are associated with abnormal lipid metabolism and occur most frequently in elderly persons with diseases of the liver, especially those complicated by icterus, nephritis, and diabetes. Two types of xanthoma must be distinguished: (1) the primary xanthoma, which is composed wholly of xanthoma cells and arises as a local manifestation of the syndrome of xanthomatosis, and (2) secondary xanthomatous degeneration arising in neoplasms and inflammatory processes. In the primary xanthoma the typical cell is the large xanthoma or foam cell. The following types of primary xanthoma may occur: (1) xanthoma palpebrarum, (2) xanthoma multiplex, (3) xanthoma diabetorum, (4) Christian's-Schueller's disease, and (5) solitary xanthoma.

It is important to differentiate secondary xanthomatous degeneration from true xanthoma. In the latter, only xanthoma cells are found, whereas in the former, tumor cells are present in addition to xanthoma cells. Xanthomatous degeneration occurs in a wide variety of neoplasms, among which are neurofibromata and neurogenic sarcomata. It usually occurs in the central portion of the tumor which is poorly supplied with blood. The giant-cell tumors occurring in aponeuroses, tendon sheaths, and joint capsules of the extremities in which there is xanthomatous degeneration are the most frequent variety of tumors containing foam cells. In addition to xanthomatous degeneration of neoplasms, xanthomatous degeneration may occur in chronic inflammation, especially chronic salpingitis and the walls of old abscesses. With regard to the frequency of xanthoma of the breast the author states that he has been able to find only 1 case report, that of Cheate.

The 3 cases reported by Haagensen were briefly as follows:

Case 1 The patient was a woman seventy-four years of age who had had a lump in the upper inner portion of the left breast for five years. She also had diabetes. The breast tumor was treated by interstitial irradiation, and nine months later mastectomy was done. The tumor proved to be a true primary xanthoma.

Case 2 The patient was a woman forty-one years of age who had had a lump in the left breast for one month. The clinical diagnosis was mastitis. Irradia-

tion was followed by extirpation of the tumor. On gross and microscopic examination the neoplasm was found to be a xanthoma.

Case 3 The patient was a woman thirty-eight years old who, three months previously, had been subjected to mastectomy for a lump in the breast which had been present for approximately a year and a half. Treatment with radium-element packs was given for supraclavicular nodes and two months later a hard subcutaneous nodule was removed. The patient subsequently developed a spinal metastasis and died. Gross and microscopic examination of the nodule showed it to be a xanthoma. No carcinoma cells were seen.

It was considered that in all 3 cases the xanthoma was primary. The first patient had both diabetes and nephritis, the second had nephritis, and in the third the finding of a xanthoma with carcinoma was considered to be incidental.

Secondary xanthomatous degeneration occurs not infrequently in true neoplasms of the breast, especially fibro-adenomata and carcinomata. Haagensen reports a case, but states that it occurs so frequently that no attempt has been made to determine its incidence. In the case reported it occurred in a giant-cell intracanalicular fibro-adenoma. There was an accompanying disturbance in the cholesterol metabolism due to diabetes. The author reports also a case of xanthomatous degeneration occurring in a chronic breast abscess, and a case in which it occurred in traumatic fat necrosis of the breast.

In discussing the diagnosis of primary xanthoma, Haagensen says that there is no positive way in which a pre-operative diagnosis may be made. Hypercholesteremia is not always present as the increased cholesterol content of the blood may vary. In 2 of the cases reported the xanthomata were relatively radiosensitive. It is probable that the diagnosis can be made only by biopsy. Frozen sections may be of value, although even in these it may be difficult to distinguish between carcinoma and the xanthoma cells.

ALTON OCHSNER, M D

TRACHEA, LUNGS, AND PLEURA

Packard, E N The Present Status of 105 Patients Treated by Pneumothorax After From One to Eighteen Years' Expansion of the Lung *J Thoracic Surg*, 1932, 1, 581

The author reports regarding 105 patients treated by artificial pneumothorax whose lungs had been re-expanded for periods ranging from one to eighteen years. One-half of them were treated in a sanatorium and the other half were treated in private practice. Of the 81 who are still alive, 62 are working and 19 are "curing."

the general metabolism thereby increasing the work put upon the insulinogenic system and favoring the development of diabetes. In some of the patients in whom the disturbance of carbohydrate metabolism is slight the diabetes may be functional or may represent the early stage of a true diabetes. Differentiation is possible only by observation over a long period of time.

In hyperthyroidism the glycogen store in the liver is low because of toxic effects upon the liver cells and the high metabolic rate with increased carbohydrate consumption and depletion of the insulinogenic apparatus. The tendency toward acidosis is therefore increased and the advisability of pre-operative and postoperative intravenous administration of glucose with or without insulin is suggested.

Leo M. Zinnerman, M.D.

Ask-Upmark, E.: Thyrotoxicosis and Tetany. Some Aspects of the Mineral Metabolism in Morbus Basedowii. *Endocrinology* 93 xvi, 369

Tetany may occur in association with hyperthyroidism in two forms. It may result from removal or injury to the parathyroids as a postoperative

complication, and it may develop before operation as a complication of thyrotoxicosis. The author reports a case and cites others from the literature. Endemic tetany may accompany endemic goiter and cretinism. On the other hand, thyroid enlargement has frequently been found in chronic tetany. Thyroid products have been employed in the treatment of tetany with definite benefit. Experimental and clinical findings confirm the assumption of a relationship between the thyroid and the parathyroid glands.

The relationship of the thyroid to mineral metabolism is evidenced by the fact that an excessive calcium intake as well as iodine deprivation favors the development of goiter. The thyroid exerts an influence upon calcium and phosphorus metabolism. The increased calcium excretion in hyperthyroidism may be a factor in the development of tetany during the course of thyrotoxicosis.

The author discusses the relation of hyperthyroidism to osteomalacia, tracheomalacia, thyroxine hyperplasia, and postoperative death in the light of newer knowledge of the thyroid and mineral metabolism.

Leo M. Zinnerman, M.D.

treated cases All of the reported cases are tabulated according to etiology and bacteriology Cases due to the pneumococcus are the most prevalent, and those due to the streptococcus and staphylococcus next most common EDWARD D. CHURCHILL, M.D.

ESOPHAGUS AND MEDIASTINUM

Eckerstroem, S. Congenital Stenosis of the Esophagus, with the Report of a Case (Etwas ueber kongenitale Oesophagusstenose im Anschluss an einen Fall) *Acta paediatr*, 1932, xii, 63

When congenital stenosis of the esophagus is complete, operation offers no hope At the General Hospital in Jönköping, Sweden, no child with complete stenosis has lived longer than two weeks When the stenosis is incomplete the patient can be kept alive, by careful attention, for a long time even if only fluid passes Vinson has reported the case of a patient seventeen years old who lived on milk alone However, such children always remain underdeveloped and do not mature sexually

The eight-year-old boy whose case is reported by the author was of the height and weight of a four-year-old child In the roentgen picture the stenosis appeared 22 cm. below the row of teeth, between the bifurcation and the cardia It was of the thickness of a knitting needle and 0.5 cm. long The segment of esophagus above the stenosis was dilated to three times its normal size and took about one-half hour to empty liquid food

With the aid of the esophagoscope the membranous septum was incised with the galvanocautery under chloroform anesthesia and a lumen of Charrière No. 18 caliber was made This was gradually widened by dilators so that at the end of three months the child was able to eat all kinds of food without difficulty SEEVERS (Z)

Teperson, H. I. The Treatment of Carcinoma of the Esophagus with Radon Implants *Am. J. Roentgenol*, 1932, xxviii, 229

The author discusses the treatment of carcinoma of the esophagus with radon implants introduced with an implanter which he devised

He states that $\frac{1}{2}$ per cent of all malignancies are located in the esophagus The most common type of esophageal malignancy is the squamous-cell carcinoma This is found four or five times more frequently in men than in women It usually occurs in the middle third of the esophagus and is most common the fifth decade of life As a rule it grows slowly and metastasizes late The principal symptom is interference with the passage of food and pain on swallowing Esophagoscopy therefore usually confirms rather than makes the diagnosis Surgical removal is rarely done because the lesion is usually discovered too late Routine esophagoscopy might increase the frequency of early diagnosis

Gastrostomy as a palliative measure is of value only when it is performed in the early stages of the disease. Esophageal intubation with a funnel-

shaped German silver tube may be done and the tube left in place permanently Irradiation by the various methods described is of little value from the standpoint of cure The principal methods used in the past were intra-esophageal irradiation which usually resulted only in palliation, and the interstitial embedding of gold or platinum removable or permanent capillary tubes into the mass The application of an external pack to the outer surface of the body has been of little value.

On the basis of Regaud's success in irradiating tumors in general with small doses over a long period of time irradiating all parts of the tumor equally and employing crossfire the author determined upon 130 mc.-hrs of irradiation per cubic centimeter of tissue for complete destruction With these principals in mind he designed an instrument which permits the homogeneous embedding of radon implants throughout the tumor and its base He describes this instrument and the technique of implantation in detail In addition to the implantation, external high voltage roentgen-ray therapy is employed A. JAMES LARKIN, M.D.

Harrington, S. W. An Anterior Mediastinal Fetal Parasite, Its Surgical Removal Report of a Case *J. Thoracic Surg*, 1932, 1, 663

Teratoid growths may be found in many parts of the body, but are most commonly situated in the pelvic, abdominal, sacrococcygeal, and thoracic regions

The case reported by Harrington is of clinical interest because of the apparently long duration, the large size, and the situation of the tumor (upper part of the mediastinum), and the mild symptoms In the removal of the tumor it was necessary to avoid injury of the mediastinal pleura as there was danger of producing empyema because the pocket of infected sebaceous material and hair surrounding the tumor was encased in a thin friable membrane which in many places was firmly adherent to the pleura Of chief interest were the gross and histological appearance of the tumor and the rarity with which a tumor of this type is found entirely within the thoracic cavity Grossly, the tumor suggested an unusual type, possibly of fetal origin. Histological examination revealed embryonic and adult tissues derived from all three layers of the blastoderm The arrangement of these tissues as shown by serial cross sections disclosed a marked degree of organoid structure

Many hypotheses have been advanced to explain the origin of these teratoid growths According to the earlier hypotheses the growths are composed of tegumental structures only and are the result of the inclusion of an invaginated portion of the ectoderm at the time of closure of the primitive thoracic wall On the basis of these theories the neoplasms were called "dermoid tumors," but in most instances this is a misnomer as the tumors are usually of more complex structure Histological study in the case reported disclosed tissues derived from all of the

The following conclusions are drawn:

1. Successful collapse of the lung with obliteration of the cavities will effectually heal the lung in the majority of cases.

2. An effective pneumothorax of two years duration with a negative sputum of at least one year duration gives reasonable assurance that the lung may be re-expanded with safety.

3. During the process of re-expansion and after ward, reactivity of the disease is the exception rather than the rule in the cases of patients who have had a satisfactory collapse.

4. Patients who have closed pulmonary cavities and a negative sputum and unintentionally lose their collapse at the end of two years or later have no more reason to fear re-activation of the lesion than those who continue the treatment for much longer periods.

J. DANIEL WILLIAMS, M.D.

Allen, D. S.: Bilateral Partial Thoracoplasty for Bilateral Pulmonary Tuberculosis. *J. Thoracic Surg.* 937, 4, 587.

The author briefly reviews the clinical experience of others with bilateral artificial pneumothorax, bilateral phrenic neurectomy, unilateral phrenic neurectomy combined with contralateral artificial pneumothorax, and combinations of these two procedures with contralateral thoracoplasty. The results in the treatment of pulmonary tuberculosis indicate the feasibility of bilateral partial thoracoplasty in cases of involvement of the upper portion of both lungs.

A decrease in the vital capacity in both sides of the chest is tolerated as well as a decrease in the vital capacity in one side of the chest, provided the decrease in both instances is of the same volume. This is equivalent to saying that, theoretically, collapse of half of both lungs is as well tolerated as collapse of all of one lung.

The author discusses three cases of bilateral partial thoracoplasty and reports one of them in detail. In the latter the first stage of the operation, unilateral apical partial thoracoplasty, was followed by such definite improvement that the second stage which had been planned to follow the first stage after from eight to twelve weeks, was not performed until twenty-seven months later. After completion of the bilateral partial thoracoplasty the patient again showed improvement and returned to his work ten months later.

The author's observations indicate that in certain cases of involvement of both lungs a bilateral partial thoracoplasty may be performed with safety and good results.

J. DANIEL WILLIAMS, M.D.

Yates, J. L.: Pulmonary Abscess. *Arch. Surg.* 939, 371, 57.

The author states that the pathogenesis and effective methods for the prevention and treatment of pulmonary abscess are established by recognizing the pulmonary structure and function peculiar to man and other animals with thick pleura. This dis-

crepancy is illustrated by observations on three patients with gangrenous abscesses and one patient with a tuberculous abscess.

The most effective means of preventing pulmonary abscess are the use of local anesthesia in the performance of operations on the mouth and tonsils, the utilization of a surgical techniqua that will be followed by minimal postoperative phlebitis, the earlier introduction of operative methods in the treatment for pulmonary tuberculosis and the prompt bronchoscopic removal of aspirated foreign bodies. The author urges the use of measures that will permit adequate drainage as soon as posture alone is found to be inadequate.

LEWIS D. CHURCHILL, M.D.

Allen, G. E., and Smith, F. J.: Primary Carcinoma of the Lung: with the Report of a Case Treated by Operation. *Surg. Gynec. & Obst.* 934, 17, 151.

The case reported was that of a woman sixty-five years old. The diagnosis of primary carcinoma of the lung was made by bronchoscopic biopsy. Operation was performed in two stages. In the first stage sections were removed from the sixth to the ninth ribs inclusive on the right side. Ethylene and oxygen anesthesia was employed with positive pressure. In the dissection of the lower lobe, a round, firm mass entirely free from the adjacent lobes and diaphragm was felt. The formation of pleural adhesions was stimulated and twelve days later the thorax was again opened. The portion of the lobe containing the tumor was then removed by crushing the lobe in three portions and cutting with the electric cautery. The clamped hilar mass was transfused and ligated with catgut in three portions. Drainage of the chest was established by a rubber tube sealed by water.

The immediate reaction was stormy but recovery was complete and the patient was discharged from the hospital after three months. Subsequently a small empyema appeared but yielded readily to treatment. Two years after the operation the patient was reported to be in good health and able to carry in her household duties. No signs of metastases or recurrence had been observed.

LEWIS D. CHURCHILL, M.D.

HEART AND PERICARDIUM

Bisgard, J. D.: Pericarditis. *Am. J. Surg.* 934, 174.

Numerous case reports of pericarditis have appeared in the literature and from time to time have been collected in statistical studies. Bisgard has surveyed the literature from May, 1927 to May, 1931, collecting 52 cases which bring the total number on record up to 17. In this article he reports his own 2 cases in detail.

In the total number of cases of suppurative pericarditis treated by conservative methods there were 77 early deaths (a mortality of 45 per cent) and 93 recoveries. These statistics are of course colored by the tendency of surgeons to report only successfully

sausage-shaped tumor (the size of a man's thumb), and the lobulated lipomata, some of which were located close to the large vessels, were removed in sections. Positive pressure was then applied, whereupon the lung became greatly distended. Under maintenance of the positive pressure the chest wall was closed with very deep sutures. The muscular layer was closed first and the skin sutured over it.

During the first five days after the operation there was a fever of 38.5 degrees C. The wound healed by primary intention.

The tumor consisted of an extrathoracic and an intrathoracic portion, about the size of a fist which were united to each other by a pedicle as thick as a thumb. The outer portion of the tumor weighed 160 gm and the inner portion, 240 gm. The outer portion consisted of yellowish-white tissue which was arranged in large and small lobes and was infiltrated with blood. The cut surface showed the lobes to be arranged around radially directed septa of connective tissue. The larger, inner portion of the tumor was covered by a piece of parietal pleura the size of the palm of the hand. It was light yellow and also showed a lobular structure, but lacked the firm consistency of the outer portion. Its lobules were small and tongue-shaped. The histological diagnosis was fibrolipoma.

Coenen assumes that these lipomata were present before the completion of the thoracic skeleton and that their dumb-bell shape was caused by the pressure of the developing thoracic skeleton, the sub-

muscular lipoma being constricted by the unyielding ribs. In Walzel's case the roentgenological determination of the extent to which the tumor protruded toward the thoracic cavity was considerably simplified by the induction of a pneumothorax. Walzel believes that the operative shock, which is unavoidable after a wide opening of the non-adherent pleura, can be diminished considerably by preliminary pneumothorax.

According to the available reports in the literature, Walzel's patient was the youngest to be subjected to such an operation with successful results.

LOBMAYER (Z)

Gillespie, M. Primary Intrathoracic Growths. A Clinical and Pathological Study of Cases Occurring in the Victoria Infirmary, Glasgow. *Glasgow M J*, 1932, cxvii, 296, cxviii, 26.

This article is based on the postmortem records of sixty-one cases of primary intrathoracic growths treated at the Victoria Infirmary, Glasgow. Of thirty-nine tumors classified histologically, five were sarcomata and thirty-two were carcinomatous.

The author concludes that in recent years there has been an increase in the incidence of intrathoracic growths which has not been due alone to better diagnosis. Chronic irritation from various sources appears to play some part in the etiology. The majority of the tumors are held to originate in the bronchi, but a few are thought to arise from the alveolar epithelium. EDWARD D. CHURCHILL, M.D.

blastodermal layers arranged in such a high degree of organoid structure as to represent intestinal tract, spinal column, cloaca, and pancreas. The author therefore believes that the growth should be classified as a fetal parasite.

Vogel, K.: A Mediastinal Gravity Abscess Cured by Endoscopic (Esophageal) Incision (Durch endoskopische Ösophagusspaltung geheilter mediastinaler Sehlungsabscess) *Zschr f Laryngol, Rhinol.*, 93, XII, 37

The author reports a case in which a post-exuding fistula leading from the esophagus into the posterior mediastinum was treated successfully by endoscopic esophageal incision.

This case demonstrates that infections of the posterior mediastinal space may not always be as serious as has been thought as even lengthy fistulous tracts may be emptied of most of their contents by swallowing movements, retching, hawking, and coughing and thus rendered relatively harmless.

ALFRED FRYER (H)

MISCELLANEOUS

Wangenstein, O. H.: Actinomycosis of the Thorax, with the Report of a Case Successfully Operated Upon. *J Thoracic Surg*, 93, 4, 63

The author reports a case of extensive primary thoracic actinomycosis with involvement of the lung, pleura, chest wall, and breast in which clinical recovery resulted after four operative interventions for the removal of diseased tissue. He concludes that cures will be more frequent when surgery is performed more often in the early stages of the condition and less reliance is placed upon the adjuvant measures of irradiation and the internal administration of potassium iodide. EARL O. LATHROP, M.D.

Walzel, F.: Successful Extirpation of a Large Dumb-bell Thoracic Lipoma in a Child Fifteen Months Old (Ueber eine mit Erfolg ausgeführte Extirpation eines grossen hantelförmigen Thorax lipoms an einem 15 Monate alten Kinde) *Arch f kl Chir*, 93, 3, 304

The so-called dumb-bell or bourgeois lipoma of the thoracic wall is a very rare and peculiar form of fatty tumor. While one part of the tumor usually develops visibly or at least palpably under the thoracic musculature the other part grows simultaneously toward the thoracic cavity causing protrusion of the pleura, and the two parts are connected with one another by a thin pedicle penetrating the intercostal space. These facts explain the name of this form of tumor. Coenen has presented an instructive explanation of the origin and development of the dumb-bell lipoma of the thorax, the conception of which was formerly very vague, and has collected all of the cases of these tumors which have been reported up to the present time.

Because of the rarity of the tumor, the author feels justified in reporting a new case which he recently

operated upon with a successful result. The operation was performed on a child fifteen months of age under urgent indication. The child was the seventh borne by his mother and was normal at birth. It had been breast fed for three months. When it was ten months old the mother noticed in its right axillary cavity a soft nodule the size of a hazelnut, which grew rapidly in the subsequent weeks. The general condition was undisturbed.

Examination by the author revealed, below the right axilla, a tumor the size of a mandarin orange, which was immovable and had a wide base on the thoracic wall. The consistency of the neoplasm was soft in some parts and firmer in others. Tenderness was not demonstrable. In the parts of the skin over the tumor which could be lifted up easily there were dilated venules. Over the right pulmonary lobes, extending down to the middle of the scapula, there was dullness and respiratory sounds were absent. Biopsy on a specimen removed with the aid of diathermy led to a diagnosis of liposarcoma.

Röntgen irradiation given six times was without any effect upon the further growth of the tumor. Repeated fluoroscopic examinations revealed merging of the shadow of the external tumor with that of a tumor of almost equal size which projected into the interior of the thorax. Respiration became increasingly difficult and slight cyanosis developed. For better röntgen demonstration of the relation between the intrathoracic tumor and the surface of the lung, pneumothorax was induced.

The operation was done under other anesthesia. The sites where the biopsies had been made were circumscribed ovally and the inner edges of the skin were sutured together. From the site of the circumference, upward and downward, a longitudinal incision was made over the fist-sized tumor as far as the thorax. After division of a few connective tissue septa the entire lipomatous tumor could be brought up onto the chest wall. It was then found that the tumor in the third intercostal space was growing into the thorax by means of a pedicle as thick as a thumb. Following removal of the external tumor the thorax was opened by resecting a piece of each of the third and fifth ribs. It was then found that the costal pleura containing a part of the lipomatous tumor the size of a small fist was protruding toward the thoracic cavity. As the lipomatous tumor was partly adherent to the unusually delicate pleura, the latter ruptured on the attempt at mobilization. With the pleura opened, the tumor was pulled into the wound and the pleura sutured with the attached tumor was removed. Because of the large size of the tumor the lung was compressed almost completely. A second sausage-shaped protrusion of the pleura, which also contained a fatty tumor was found on the posterior aspect of the pleural dome. At this site the pulmonary apex was broadly adherent. The adhesions were sharply divided. It was necessary to divide also fine adhesions to the surface of the lungs, between the tumor first described and the lateral surface of the lungs. The pleura was incised over the

culous mesenteric glands in the upper part of the abdomen may produce compression of the pylorus, duodenum, or bile ducts

The findings of physical examination are usually few. The temperature rises intermittently and the tuberculin test is positive. The von Pirquet test is also positive except in cases with cachexia. As a rule a resistant mass can be palpated in the line of the mesentery. In 1912 Floderus reported that he had found such a mass in 92 of 100 cases. On pressure, there is tenderness over the mass, usually closer to the midline than McBurney's point. X-ray examination often shows calcifications in the glands. When calcifications are not present it is impossible to differentiate between non-tuberculous and tuberculous glands. Acute or subacute frequently recurring pains occur as a rule in the lower right part of the abdomen or the umbilical region. These are accompanied sometimes by vomiting, fairly often by diarrhoea, and not seldom by a marked rise in the temperature at an early stage of the illness. Regression of the symptoms occurs in a relatively short time. In the great majority of cases there is tenderness at the site of the tuberculous changes. However, the tenderness is not marked and there is no muscular rigidity. In some cases free from other symptoms chronic tenderness is noted over the mesentery. In only from 8 to 31 per cent of the total number of cases are the symptoms sufficiently definite to permit a clinical diagnosis.

In the roentgenological diagnosis of mesenteric lymph-gland tuberculosis it is the glandular calcifications that are of aid. According to the author's experience, calcifications may be formed in tuberculous mesenteric glands within as short a period as one and one-half years.

In the differential diagnosis, acute appendicitis and non-tuberculous lymph-gland enlargements must be considered. In the differentiation from acute appendicitis it must be borne in mind that in tuberculosis of the mesenteric lymph glands the pain begins in the right iliac fossa and is not severe, vomiting is less frequent, the temperature rises early, the general and peritoneal symptoms are not in proportion to the fever, and as a rule there is no tenderness in the rectum. The differentiation from non-tuberculous glandular swellings is more difficult. The absence of calcifications, a negative tuberculin test, and the general course of the illness may be of aid. In umbilical colic the pains may be so severe as to suggest intussusception. In such cases the barium enema may be of diagnostic aid. Sometimes the only symptom is fever. Under such circumstances typhoid may be suspected. The leucopenia in both conditions is confusing, but bacteriological examination will permit a differentiation.

The possibility of mesenteric lymph-gland tuberculosis should be considered in the cases of children and young adults with acute abdominal symptoms, recurring umbilical colic, and persistent fever, and, in general, whenever tuberculous infection is suspected. Careful palpation of the abdomen and

X-ray examination will give valuable information in these cases.

When the temperature is high and there is no leucocytosis the prognosis is unfavorable. According to the author's statistics, the prognosis is in general favorable, but it must be borne in mind that most of the author's patients were between the ages of eleven and twenty years and presented surgical symptoms. None of them was an infant, and only a few were free from abdominal symptoms.

The treatment should be conservative. The usual general treatment for tuberculosis should be given. Operative measures are indicated chiefly for diagnosis in obscure cases with severe abdominal symptoms. In some cases abscessed glands with existing or threatening perforation have been scraped out. Caseous and calcified glands have been removed. In 2 cases ileocolostomy was done for obstruction at the ileocaecal angle. Some surgeons have advocated exploratory laparotomy under irradiation with the ultraviolet rays. According to the author, the abdominal symptoms are of such a benign and temporary nature that the quick recovery after exploratory laparotomy is explained by the character of the infection rather than by the operation.

Strömbeck reviews 349 cases showing the variations in the symptoms, and supplements his article with a comprehensive bibliography.

MANUEL E. LICHTENSTEIN, M.D.

Rosenstein, P. Free Omental Transplants (Zur freien Netztransplantation). *Arch f. Klin. Chir.*, 1932, clxxx, 639.

The author reports his experiences with free omental transplantation and recommends the method which, in a period of twenty-five years, he has used in forty cases. The purpose of free omental transplantation is to cover over serosal defects in the intestine. Rosenstein has not employed it to promote hæmostasis.

While in the use of pedicled grafts of the omentum the omental flap pulls unnecessarily on the intestine and the intestine attempts to free itself from its shackles, such dangers are not associated with the use of free omental grafts. As free omental transplants have a tendency to shrink, it is advisable, in covering circular serosal defects, to use two omental flaps, attach each by one border to the mesentery, and overlap the other borders. Obviously, defects in the muscular layer and particularly in the mucosa cannot be filled by free omental transplants. Such defects must first be sutured. The plastic procedure is applicable only to serosal defects. Not only should the transplanted omentum be fastened at its borders, but its surface should be attached to the underlying intestine by multiple sutures. In two cases—in one at autopsy after accidental death, and in the other at a second laparotomy—it was found that marked adhesions had not developed in the region of the transplant.

The extent to which the method can be used is demonstrated by the fact that in one case a flap of

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Selfert, E.: Encysted Hernia (Die Hernie encystica)
Deutscher Ztschr f Chir 193 227-231, 8

The term "encysted hernia" is urgently in need of a thorough explanation. There is both a true congenital and a false cyst formation. The former is possible only in association with an inguinal hernia while the latter is not confined to any particular type of hernia.

The two forms cannot be differentiated by the gross anatomical structure of the wall of the sac. Only the tissue structure is of significance. The constituents of the wall of a false encysted hernia may be recognized by the fact that they represent the results of trauma, contain iron pigment from old hemorrhages, and show evidence of scar tissue and pocket formation. Such tissue changes are not nearly so abundant in the true encysted hernia. It is difficult to reach a definite decision from operative findings alone, at least in the case of encysted inguinal hernia. In the female however only the false type is possible.

Several cases are discussed

DeGroot (Z)

Smith, A. M.: Perimesenteric Intra-Abdominal Hernia. *J Surg* 93 254, 293

Hernia through abnormal openings in the mesentery of the small intestine are rare. Most of these anomalies are congenital.

The weakest point in the mesentery is an area near the ileocecal junction which is free of fat, lymph nodes, and blood vessels. It is in this region that the openings are nearly always found. During the seventh week of fetal life the rapidly enlarging liver occupies so much space in the small abdominal cavity that there is insufficient room for expansion of the intestinal tube. In consequence, the greater part of the intestine is displaced from the abdominal cavity into the colon within the umbilical cord, and when the intestines are pushed out a hole is sometimes made in the mesentery at its weakest point. This is a very plausible explanation of the formation of most of the defects through which herniation occurs. However it is probable that some of the defects, especially those which are slit-like and have ragged edges, are produced by trauma in later life.

The author reviews thirty-six cases of perimesenteric hernia and reports a case of his own.

The condition is usually diagnosed as intestinal obstruction. In several of the cases reviewed and in the case reported by the author a diagnosis of acute appendicitis was made. In none was the condition diagnosed correctly before operation. The mortality is over 50 per cent. Of thirty-one patients traced, sixteen died and fifteen recovered.

The size of the opening in the cases reviewed varied from $\frac{1}{4}$ in. to 5 in. Most of the apertures were circular but a few were slit-like. Only two of them were apparently of recent origin.

CHRISTIAN F. DEBOER, M.D.

Serdénbeck, J. P.: Mesenteric Lymphadenitis. A Clinical Study. *Acta chirurg Scand* 254, 122, Supp. 32.

Clinically, primary tuberculous of the mesenteric lymph glands may be defined as a tuberculous process localized in the lymphatic glands of the mesentery which cannot be considered to have been caused by open pulmonary tuberculosis. Pathologically it is an isolated tuberculous of the mesenteric lymph glands in which, at autopsy, no tuberculous changes can be found either in the part of the intestines corresponding to the glands or anywhere else in the body. While the organisms may have penetrated the mucous membrane of the respiratory tract or the intestinal mucosa, the point of entrance has healed without visible evidence of previous disease.

Opinions as to the incidence of the condition vary considerably. In 1920 Gehrels stated that in childhood the respiratory tract is the most common site of primary tuberculous infection and the incidence of primary intestinal and mesenteric lymph-gland tuberculous is from 20 to 25 per cent.

The cause of primary tuberculous of the mesenteric lymph glands is probably the tubercle bacillus of the bovine type which is taken into the body with milk from tuberculous cows. As a marked increase in the incidence of the infection occurred in Germany during the World War it appears that malnutrition reduces the resistance to the condition. The swallowing of tubercle bacilli from the respiratory tract also predisposes to the intestinal type of the disease. It is probable that in most cases primary tuberculous of the mesenteric lymph glands is due to the dissemination of tubercle bacilli through the lymphatics from the intestinal mucous membrane.

The term *tuberculous mesentericus* was first applied to tuberculous of the mesenteric lymph glands by Ball in 1775. In many instances the condition is latent. In 1915 Riley found mesenteric lymph-gland tuberculous in 65 postmortem examinations, but in none of the clinical records of these cases was there any mention of the condition. However in some cases there may be very severe pain simulating that of appendicitis, biliary colic, renal colic, or intestinal spasm. In some cases calcification of the glands has been associated with symptoms of adhesion. When rupture of a broken-down gland has occurred, symptoms of generalized peritonitis may be present. Cases of thrombosis of the mesenteric vessels caused by tuberculous glands have been reported. Tuber

which is phylogenetically inferior, like the appendix, and that its predisposition to ulcer is similar to that of the appendix to inflammation.

Various causes may contribute to making the gastric juice particularly aggressive. Its acidity may be increased or may be imperfectly neutralized because the stomach is empty. The presence of acid gastric juice in fasting individuals is one of the most characteristic functional anomalies of ulcer.

The acidity of the gastric juice may be increased also by stagnation of the stomach contents. Ordinarily the gastric juice does not injure the mucosa because it does not remain in contact with it long enough, but if the stomach contents become stagnant the mucosa is exposed to the action of the gastric juice for a much longer time and erosion results. In support of this theory the authors describe an operative specimen which showed a bilocular stomach from ulcerous midgastric stenosis. The proximal pouch of this stomach presented many erosions and ulcers of various sizes while the mucosa of the distal or pyloric pouch was absolutely normal. Evidently the stagnation in the proximal pouch caused the ulcers. The ulcers were more numerous and larger in the zone immediately adjacent to the stenosis than farther from it. The histological picture was just the same as that of an ordinary pyloric ulcer. Evidently therefore gastric stenosis causing stagnation of the gastric contents may cause ulcer.

This has been proved by Sierra. In experiments on animals Sierra performed gastro-enterostomies with or without exclusion of the pylorus. Ulcers occurred only when exclusion of the pylorus was done. They never appeared at the anastomosis, but were always found on the duodenal or afferent side in the part of the duodenum nearest the pylorus, that is, where a cul-de-sac was formed as the result of the stenosis of the pylorus. The incidence of the lesions was about 30 per cent, which is much lower than that reported by Mann and Williamson, Winkelhauer and Starlinger, and Weiss and Gurnarén after more complex operations which deviated the juices that normally flow into the duodenum. Especially the experiments of Weiss and Gurnarén show that these juices protect the duodenal mucous membrane. In Sierra's experiments, which did not interfere with the flow of these juices into the duodenum, ulcers occurred in spite of their protective action only when there was a cul-de-sac with stagnation. It therefore appears that the ulcers were caused in some cases simply by a detail of technique. When the afferent and efferent loops were so situated that there was free passage of stomach contents there were no ulcers. It is possible that spasm of the efferent mouth might cause reflux into the proximal segment. Schmilinsky has studied this cause of peptic ulcer in man.

In a study of the production of ulcer by gastrotoxic serum Balton found that ulcers resulted when stagnation of the stomach contents was brought about. When he interfered with the passage of food through the pylorus by introducing rubber tubes,

ulcers were produced. Aside from these cases in which passage was interfered with, ulcers occurred only in cases in which the acidity of the gastric juice was greatly increased by injections of pilocarpin.

In further support of their theory the authors present figures regarding the presence of fluid and its acidity in the fasting stomach and in cases of ulcer of the lesser curvature, ulcer of the pylorus, and duodenal ulcer. The fasting stomach always contains some liquid which has a certain degree of acidity. The authors' figures show that the presence of ulcer does not of itself cause increased secretion or increased acidity of the stomach contents. These are brought about only when the ulcer is accompanied by stagnation and are much greater in cases of ulcer caused by a mechanical obstacle to evacuation, such as pyloric ulcers, than in cases of ulcer caused by spasm of the pylorus, such as duodenal ulcers.

That ulcer may be the cause of stagnation has been proved by the experimental work of Wolkowitch. However, the existence of primary spasm of the pylorus producing stagnation with resulting cauterization of the mucous membrane by the retained liquid has been proved beyond doubt. Carlson has demonstrated experimentally that stimulation of all of the sensory visceral nerves causes permanent contraction of the pylorus without the normal intervals of relaxation in the second period of the digestive cycle. The experiments of Puhl and Brodersen also show the ulcer-producing action of increased tonus of the pylorus. Weiss, Graves, and Gurnarén also admit this ulcer-producing action of primary spasm of the pylorus.

There are doubtless still other factors in the production of ulcer. Bergmann holds that ulcer is a result of dysharmonies in the sympathetic nervous system. However, no conclusive evidence has been offered of the influence of the sympathetic nerves in the production of ulcer.

Duodenal ulcers generally occur in the first portion of the duodenum, the only part in which the chyme remains for any considerable time. Here, also, there may be other factors. Westphal has shown that spasm of the pylorus favors the production of duodenal ulcer because, on account of the stenosis of the pylorus, the chyme is thrown against the wall of the duodenum in the form of a jet under high pressure. The impact causes a contusion of the wall of the bulb resulting in retention of the chyme. Stenosis of the second portion of the duodenum has the same effect. Sloan has reported sixty-four cases of this type, and Redon has recently called attention to the frequent association of duodenal ulcer with incomplete stenosis of the duodenum.

Stagnation is a factor also in postoperative jejunal ulcer. When gastro-enterostomy with exclusion of the pylorus was the treatment of choice postoperative jejunal ulcers were very frequent. They are not nearly so common since gastrectomy has been performed more often. They are less common also when the jejunum is implanted in such a way as to prevent the retention of gastric contents.

omentum 15 cm. long and 5 cm. wide was used on a loop of small intestine with an excellent result. Essential for success is primary closure of the abdominal cavity. In order to prevent gastric and intestinal hemorrhages it is necessary to avoid using the parts of the omentum in which the larger vessels occur.
MAX BURDE (X)

GASTRO-INTESTINAL TRACT

Bastos and Fernández: The Part Played in the Pathogenesis of Ulcer of the Stomach by Stagnation of the Stomach Contents (Contribución a la patogenia de la úlcera gástrica. Papel de la estasis). *Acta Soc. de ciruj. de Madrid* 93, 4, 93.

There is general agreement in recent years that a number of factors enter into the production of gastric ulcer, some of them exogenous, such as infections and intoxications, and some of them constitutional. It seems evident, however, that the immediate cause is the digestive action of the gastric juice, and that the old name "peptic ulcer" is the most descriptive. The histological study of ulcers and their experimental production by measures increasing the digestive activity of the juice leaves no doubt as to the peptic nature of the lesions.

While it is true that some areas of the mucosa may be more exposed to the action of the gastric juice because of sluggishness of the local circulation, Hauser's theory that ulcer is caused by necrosis from embolic infarct is not correct. If it were correct ulcers would always have the wedge shape of an infarct, they would not remain limited to the mucosa as they are all limited at first, and microscopic examination would show them to be necrotic.

Microscopic examination of a recent ulcer demonstrates that the lesion consists simply of a mortification of the most superficial part of the mucosa. The mucosa looks as if it were coagulated. Askaniary called the lesion a "fibrinoid necrosis." In the majority of cases the coagulated zone has been eliminated by the time the examination is made and the folds of the mucous membrane look decapitated. A certain number of the glands are sectioned at the neck and all at the same level. The histological picture suggests cauterization of the surface of the mucous membrane. Only a mild caustic could produce such lesions limited to the most prominent parts of the mucous membrane. Apparently the lesions are caused by the hydrochloric acid of the gastric juice. Experiment confirms this theory. Bernard found that the lesions produced in the web of a frog's foot by the action of gastric juice were the same as those produced by the action of a 3 per cent solution of hydrochloric acid. Matthes and Langensköld found that gastric juice and an artificial caustic produced the same kind of lesions in the mucous membrane of the duodenum. Matthes discovered that when the mucous membrane was subjected to the action of strong pepsin and non-caustic acids (uric and hippuric) the typical lesions were not produced.

The lesions are surrounded by a reactive zone which gives them the appearance of inflammation. It is quite correct to call this a gastritis or duodenitis, but there is no reason to suppose that the inflammation is primary and the ulcers are caused by it.

Kontjetzky and Puhl accepted the inflammatory theory on the basis of the findings of histological examinations of operative specimens, but operative specimens usually represent an advanced stage of ulcer in which there is no longer any trace of cauterization and the reactive process is in full activity. Occasionally, however, early erosions are seen. Boechner, who has recently written a splendid work in defense of the peptic genesis of ulcer, described a series of specimens which were absolutely conclusive. He found that these early clinical lesions are identical with those produced in cats by introducing into the stomach 0.8 to 1.5 per cent solutions of hydrochloric acid.

In a recent work Puhl and Brodersen described experiments on fasting animals in which they produced typical ulcers by stimulating the flow of gastric juice by the sight of food, by the injection of histamine, and by faradization of the vagus. They admit that the lesions so produced could not be attributed solely to inflammation.

Even the opponents of the peptic theory recognize that acute ulcers are changed into chronic ulcers by the action of the gastric juice. As the result of such action the ulcer extends from the mucosa to the deeper tissues until a wall of cicatricial tissue is formed. There are all transition stages between superficial erosions of the mucous membrane and deep callosal ulcers. There is no fundamental difference between the two types. Hauser's distinction between an erosion limited to the mucous membrane and an ulcer extending into the submucosa is arbitrary.

There still remains the question as to why the gastric juice leaves most stomachs unharmed, produces only superficial erosions in some, and causes deep callosal ulcers in a few. It is evident that a normal gastric juice produced by normal glands will not cauterize a mucosa with a normal circulation. For the production of an ulcer either the gastric juice or the mucosa must be changed.

Ulcers are more common in some parts of the stomach than in others. They occur frequently in the so-called gastric highway which is formed by longitudinal folds of mucous membrane parallel with the lesser and greater curvatures. These folds are particularly exposed to the action of the gastric juice because they protrude into the lumen of the stomach. In accidental cauterization from the swallowing of lye or acid they are always more seriously injured than other parts of the stomach. However, it has not been proved that they form a special pathway for the passage of the food as Aschoff claims. Serious objections have been raised by Elze and Lehmann to this mechanical theory of Aschoff's with regard to the genesis of ulcer. Kontjetzky, Hauser and Bauer think the stomach highway is a zone

Hospital, Cleveland, during the ten-year period from 1921 to 1931. The tissue studied was obtained by biopsy, operative resection, and autopsy. During the same period of time no cases of sarcoma were seen.

The greatest number of cancers of the colon occur between the ages of forty-one and sixty years. Cancer of the colon develops at a somewhat earlier age than cancer of the rectum and at a somewhat earlier age in females than in males. It is probable that cancer of the rectum also occurs earlier in females than males. Carcinoma is far more frequent in the large bowel than in the small bowel. Of the 104 cancers of the large bowel reviewed by the authors, 52 were cancers of the colon and 52 cancers of the rectum. The flexures of the colon are favorable sites for the development of cancer. The splenic flexure is the third most common site of cancer. With the exception of the sigmoid flexure, the parts of the large intestine most frequently involved are the cæcum, transverse colon, and sigmoid.

Cancer occurs in the rectum about as frequently as in the colon.

If multiple malignant changes in polyposis are excluded, multiple cancers of the large intestine are uncommon. In the cases reviewed by the authors there were no multiple tumors.

According to their gross appearance, cancers of the large intestine may be classified as (1) projecting or polypoid, (2) infiltrating and ulcerative, and (3) stenosing. All microscopic studies indicate that cancers of the large intestine originate in crypt cells. These cells normally produce mucin and are often of the goblet type. When they become the components of cancer, they may or may not secrete mucin. Tumors producing large amounts of mucin are often referred to as "colloid cancers," but the name "mucinous cancers" is to be preferred. Most mucinous cancers are of low malignancy. In the opinion of the authors, mucin production is an incident in tumor development.

Although cancers of the colon may extend longitudinally, they often extend laterally in the gut wall. About 25 per cent of all types are in some degree annular. Obstruction is a feature of protruding or stenotic cancers and is not necessarily related to annular spread of the growth. Cancers of the large intestine may extend locally and metastasize to regional lymph nodes and distant points. Local extension along the gut wall is rare.

Adenomatous polyps frequently become malignant. It is not established that all cancers of the large intestine originate in polyps, but it seems probable that about 40 per cent have such an origin. While the presence of marginal adenomatous polyps may be a phenomenon of irritation, it does not constitute proof that the cancer had its origin in the polyps.

Grading on the basis of microscopic criteria indicates that as anaplasia increases in rectal cancers, the age incidence, duration of symptoms, and length of life decrease. Of the cancers reviewed by the au-

thors, those occurring in the colon were of a higher grade than those occurring in the rectum.

Pain is a frequent initial symptom, especially in cancer of the rectum and sigmoid. Constipation is more common in cancer of the left half of the large intestine than in cancer of the right half. It is especially common in cases of cancer of the flexures and the ascending colon. Vomiting is frequent in cases of cancer of the splenic and hepatic flexures. Diarrhœa is most often associated with cancer of the rectum. Blood in the stools is most common in rectal cancer and less common the higher the location of the growth in the colon. Obstruction occurs most often in cancer of the splenic flexure and next most often in cancer of the hepatic flexure. Anæmia is more severe in cancer of the right half of the colon than in cancer of the left half.

JOHN W. NUTZUM, M.D.

Loehr. The Etiology of Appendicitis (*Ätiologie der Appendicitis*). *Zentralbl. f. Chir.*, 1932, p. 1160.

The author reports on the bacteriological findings of a three-year investigation of the flora of the appendix which he carried out with Rassfeld. The gram-positive bacilli, which were observed by Aschoff in 1908 and, with diplococci, were believed by him to be causes of appendicitis, were demonstrated by Loehr and Rassfeld, in a very thorough investigation, to be actinomycetes of extremely variable types. While we cannot conclude from this that the actinomycetes are of significance in the pathogenesis of appendicitis, these organisms are of interest because they are found predominating and in large numbers in the contents of gangrenous appendices. They also take part in the formation of fecaliths, in which they are extremely numerous and often present in pure culture. As the culturing of these actinomycetes requires a very long time even on the most favorable culture media, the presence of the organisms in large numbers and sometimes in pure culture in the gangrenous appendix shows that in such cases the appendix has lost its function for a long time. In these functionally degenerated appendices there is not only a great increase of actinomycetes, but also an exceedingly frequent formation of fecaliths. Gangrenous appendices are predominantly those with fecaliths causing central occlusion or occlusion behind links. The author believes that after complete occlusion of the appendix gangrene may occur very quickly. This is evident from case histories. Therefore, cases of gangrene are entirely different in their pathogenesis from cases of acute inflammation of the appendix. Gangrenous appendices are chiefly appendices that have gone through a number of attacks of appendicitis.

Recently Aschoff designated the intestinal streptococci (enterococci) as the excitants of appendicitis instead of the gram-positive bacilli (actinomycetes). The most varying types of enterococci have been grouped under this collective name (according to Gundel). Even though Loehr and Rassfeld also

In the discussion of this report MADHAVKHA reported two cases of marked stagnation of stomach contents in which there was no ulcer and cited cases of duodenal ulcer near the pylorus in which there was great retention in the stomach but no gastric ulcer. He stated that the relation of hyperacidity to ulcer is also far from settled. In Spain, hypochlorhydria is rare in cases of gastric ulcer whereas in northern Europe—Sweden, for example—its incidence is as high as that of hyperchlorhydria in Spain.

SLÖCKER cited cases of stagnation without ulcer from spasm of the pylorus caused by cholecystitis. When the cholecystitis was operated upon the spasm stopped.

DE MATA said that the theory of Bastos and Fernandes is very similar to the theory of Aschoff but pathological anatomy has not confirmed Aschoff's views. There are many factors in the production of ulcer and the problem is by no means solved. It has been shown that ulcer may be associated with hyperchlorhydria, hypochlorhydria or anhydria. Herando has found increased pepsin in many cases. In postoperative cases neither Aschoff's nor Bergmann's theory is applicable. It is possible that in such cases the shock of the jet from the pylorus may be a factor.

PIRATO said that the most common sites of ulcer are the lesser curvature of the stomach and the bulb of the duodenum, and if stagnation were the cause the lesions would be more apt to be located in the fundus of the stomach and on the greater curvature. In most of his cases of gastric ulcer he has found by perchlorhydria. He believes that stagnation acts by producing a hyperconcentration of the gastric juice such as occurs after high gastro-enterostomy. He reported a case of gastro-enterostomy of the upper pouch for bilocular stomach from ulcer of the lesser curvature. The stomach emptied perfectly but acid contents accumulated in the lower pouch and the latter emptied by overflowing through both the stenotic pylorus and the mesogastric stenosis. A second operation revealed, in addition to the original ulcer on the lesser curvature as ulcer of the pylorus and a ulcer on the jejunal border of the gastro-enterostomy opening where the hyperconcentrated fluid passed without stagnation. There was no ulcer in the lower pouch where the hyperconcentrated fluid became stagnated. At the last Surgical Congress in Paris Lerche and Gosset advanced the theory that gastric ulcer is caused by a change in the production of the mucus which protects the stomach against acidity. They believe that stagnation may cause a gastritis which later brings about a metaplasia of the cells producing the protective mucus.

VADNEY GOW MORGAN, M.D.

BENSON, P. C., and Hubbard, J. S.: Roentgenographic Manifestations of Intestinal Obstruction. *Arch. Surg.* 1913, xvi, 578.

In intestinal obstruction early diagnosis is necessary if the mortality is to be lowered. The authors statistics for all cases of acute and chronic obstruc-

tion treated during the last three years show a mortality of 41.8 per cent, but in the cases in which roentgenographic examination was used as an aid in the diagnosis the mortality was lower than the average.

The authors report roentgen studies of intestinal obstruction which were carried out on thirteen days. Mechanical obstruction was produced in nine of the dogs and paralytic ileus in four. Roentgenographic evidence of gaseous distention of the bowel was evident three and a half hours after acute high obstruction and about three hours after low obstruction. In both high and low obstruction, fluid levels were demonstrable from three to four hours after the appearance of the gas. The roentgenographic findings were evident before the clinical findings were definite.

In an effort to determine the level of obstruction, a study was made of the character of roentgen shadows in fresh specimens of human small intestine which were distended with air. A fairly abrupt transition from the characteristic striated appearance of the jejunum to the smooth-walled ileum was noted. The authors conclude that this permits a much more exact determination of the level of obstruction than was thought possible heretofore.

ROBERT ZOLLINGER, M.D.

VAUGHAN, R. T., and Singer, H. A.: Perforated Peptic Ulcer of Meckel's Diverticulum. *A. S. Surg.* 23, xvi, 30.

Meckel's diverticulum usually resembles small bowel histologically but may contain structures normally found elsewhere in the digestive tract. Elements of gastric, duodenal, colonic, and pancreatic character and those of questionable origin have been found within the diverticulum. Of these heterotopic structures, gastric mucosa is of the greatest clinical importance because its secretion has the ability to digest the intestinal mucosa and muscularis and thereby lead to ulcer formation.

Relatively few cases of perforated peptic ulcer of Meckel's diverticulum have been recorded. In 1913 Huebschmann first reported and demonstrated the relationship between peptic ulcer and perforation of Meckel's diverticulum. Fifteen cases have been reported since then but a histological examination was made in only ten of them. To this series the authors add a case of perforated ulcer in the distal half of the diverticulum which was operated upon at the Cook County Hospital, Chicago. Histological examination of the excised diverticulum showed the proximal three-fifths to be typical ileum and the distal two-fifths to be lined by mucosa closely resembling the mucosa of the fundus of the stomach.

SAMUEL J. FORTINER, M.D.

KARNER, H. T., and Clark, B., Jr.: An Analysis of 184 Cases of Carcinoma of the Large Intestine. *Am. J. Cancer* 933, xvi, 932.

The authors review 184 cases of carcinoma of the large intestine which were admitted to the Lakeside

5 Subsphincteric (a) blind internal, (b) complete, (c) bilateral (anterior horseshoe)

6 Ischiorectal (a) blind external, (b) blind internal, (c) complete, (d) bilateral (posterior horseshoe)

A complete anorectal fistula presents four features of interest (1) the external opening, (2) the internal opening, (3) the main track, and (4) the offshoots from the main track.

The external opening presents characteristics which are of importance in determining the type of the fistula. A small and contracted opening within an inch of the anal verge is probably that of a subcutaneous fistula. A large irregular opening with undermined edges probably indicates a tuberculous condition, especially if the surrounding tissues are reddish purple. An opening surmounted by a tuft of granulation tissue indicates a deep fistula such as an ischiorectal or pararectal fistula. An opening within $\frac{1}{2}$ in. of the anal verge is usually of the submucous type. The presence of several external openings is an indication of the presence of offshoots from the main track of a deep fistula such as an ischiorectal or pararectal fistula.

The internal opening is always located in the interior of the bowel and is due to perforation of the mucous coat. It is usually small and round, but when it is due to the tearing off of a polyp, the laceration of a crypt, or tearing by a foreign body it may be irregular. A very large opening is usually due to tuberculosis. The opening of a pararectal fistula is usually located at the level of the levatores ani at a distance of 2 or 3 in. above the anal margin. A submucous fistula is usually at the level of Hilton's white line. A subsphincteric fistula is always situated in the anal canal at the level of the valves of Morgagni in either the right anterior quadrant, the left anterior quadrant, or the posterior midline. The opening of an ischiorectal fistula is always in the posterior midline between the sphincters. In subsphincteric and ischiorectal fistulae, which constitute less than 30 per cent of all anorectal fistulae, the location of the internal opening may be found by bearing in mind the rules of Goodsall which are as follows:

1 If the primary external opening is situated from $\frac{1}{2}$ to $1\frac{1}{2}$ in. from the anal margin and either anterior to, or on, the transverse line, the internal opening will be found opposite the interval between the sphincters in the same radial line as the external opening, and the main track will be straight.

2 If the external opening is a similar distance from the anal margin but posterior to the line, the internal opening will be found in the posterior midline, opposite the interval between the sphincters, and the main track will have a curved course.

3 If the external opening is at a greater distance than $1\frac{1}{2}$ in. from the anal margin, either anterior or posterior to the line, the internal opening will always be found in the posterior midline, opposite the interval between the sphincters, and the main track will have a curved course.

The main track extends from the internal opening to the primary external opening, and may have a straight, curved, or tortuous course. The exact position of the main track of a fistula in regard to the muscular apparatus controlling the outlet of the rectum is of the utmost importance from the standpoint of surgical treatment. Failure to recognize the fact that not all anorectal fistulae are of the same type is responsible for the disastrous consequences sometimes resulting from operative treatment.

Offshoots or extensions from the main track occur whenever there is a free discharge of pus from the internal opening or the primary external opening. They are not necessarily confined to the same anatomical locality. The secondary tracks connected with an ischiorectal fistula, for example, may be located entirely in the subcutaneous tissue. As the lymphatics on both sides are symmetrically disposed, an offshoot from a unilateral fistula, which extends across the middle line to the other side follows a course exactly similar to that taken by the main track of the original fistula. The extension simulates the disposition of the original fistula, terminates in an external opening in a position corresponding to that occupied by the primary opening, and gives rise to offshoots following a course similar to that taken by the offshoots from the original main track. The fistula which most often extends to the opposite side is of the ischiorectal type, but fistulae of the submucous type may also extend in this way.

Whenever a fistulous communication with the interior of the anal canal or rectum has been established, spontaneous cure seldom results. Therefore the treatment of anorectal fistulae is usually operative although under certain circumstances palliative measures may be employed. Palliative treatment rarely effects a permanent cure, but should always be adopted in cases in which the constitutional condition contra-indicates operative interference. The use of warm sitz baths and the application of fomentations to the perineum are advisable. Daily evacuation of the bowels should be insured by the administration of mild aperients, but strong purgatives should be avoided as violent peristalsis may force liquid faeces into the internal opening and set up active suppurative to the main track.

The principle underlying the surgical treatment of a fistula is opening of the main track from end to end, together with all of the offshoots. It is possible to efface all fistulae in this way, but whether a satisfactory result is obtained or not depends upon the damage that may have been inflicted on the muscular apparatus controlling the anal outlet. Although the majority of anorectal fistulae communicate with the interior of the bowel by an internal opening, in only a small percentage of them is the muscular coat penetrated by the main track. In the latter, the laying open of the main track from end to end results in serious impairment of the muscular control of the anus.

While loss of control after fistula operations is generally attributed to division of the internal

found the enterococci in a high percentage of cases together with other types of bacteria; they do not agree with the new theory of Aschoff since in not a small percentage of cases they obtained on culture, in addition to these enterococci, types of streptococci with a known pathogenicity which could not be classified under the collective term enterococci or "intestinal streptococci." The elective phagocytosis suggested by Aschoff as a criterion for the pathogenicity of the enterococci is not recognized by Loehr and Ramsfeld because other bacteria which were not enterococci were found phagocytosed by Aschoff and by them.

Surgeons are also opposed to the belief of Aschoff that in appendicitis without symptoms indicating a previous attack operation should be delayed twenty-four hours because it will then be possible to tell whether the process is receding or progressing. Operation should be performed immediately in every recognized case of appendicitis, as even in the most severe cases the history is often remarkably brief and in many instances symptoms pointing to a previous appendicitis cannot be found. Therefore the surgeon must still, as before, operate on appendicitis as early as possible as the anamnesis and often even the objective findings and general clinical picture are frequently in marked contrast to the severity of the process encountered at operation.

LOEHR (Z)

Kallio, K. K.: Volvulus of the Transverse Colon (Über Volvulus coli transversum) *Acta chirurg. Scand.*, 934, 193, 90.

The author has collected 16 cases of volvulus of the transverse colon from the literature. To these he adds 2 cases which were found among the 337 cases of intestinal obstruction treated at the Abo District Hospital, Finland, in the period from 1915 to 1919.

A brief review of studies of the anatomy of the large intestine, and especially of the transverse colon, which have been made in Finland and other countries is followed by a discussion of the importance of certain anatomical and pathologic-anatomical relationships in the etiology of volvulus of the transverse colon.

Kallio believes that the transverse colon under goes volvulus more easily the more closely it resembles the sigmoid flexure in shape and fixation, that is, the nearer its points of fixation are to each other. In the anasthetic habitus the base of the transverse colon is narrow. The ends of this portion of the intestine may be drawn closer together also by cicatrices in the mesocolon and may approach each other relatively when the transverse colon is distended by the severe obstipation and meteorism which are common in these patients, especially in the transverse colon.

As in 3 of the cases reviewed there was also an obstruction in the sigmoid flexure the author believes that in these cases the volvulus of the transverse colon was secondary to the obstruction which occurred lower and increased the gas pressure. These cases support the theory of Tiffels that in cer-

tain local anatomical conditions the gas pressure in the colon is the chief factor in the mechanism of intestinal occlusion due to volvulus of the transverse colon.

Miles, W. E.: Anorectal Fistulae. *Proc. Roy. Soc. Med.*, Lond. 193, xxv 1940.

Fistulous communications about the anus usually referred to as "fistula-in-ano" are better designated "anorectal fistulae." The latter term indicates involvement of not only the anus but also the anal canal and rectum. Not all surface apertures of the perineum are anorectal fistulae. Openings on the anterior portion of the perineum, especially those near the midline, may be urethral fistulae. Those on the lateral portion of the perineum more than 2 in. from the anus on the transverse anal line are probably perirectal abscess fistulae. Perirectal abscesses are the result of sequestration originating in the prostatic utricle, the base of the bladder, the prostate, or the seminal vesicles and occupy the superior perirectal space of Richet. As the pus is prevented from being discharged into the rectum by the fascia propria of the rectum which shuts off the perirectal space from the pararectal space, it extends through the levators ani and invades the ischio-rectal fossa, ultimately finding an exit through an opening on the skin surface. A surface opening situated on the posterior part of the perineum in the midline between the tip of the coccyx and the anal margin may communicate with a suppurating dermoid. Openings situated laterally and about 1 in. from the coccyx represent perineal abscesses resulting from infected presacral lymph glands. A surface opening situated close to the midline at the level of the upper end of the ismaternal cleft indicates the presence of a sacro-coccygeal sinus. In the region of the tubercularity of the sacrum, the sacrum, or the coccyx there may be sinuses leading down to carious bone. Apertures other than these are anorectal fistulae.

Anorectal fistulae may result from penetrating wounds from the skin into the rectum or anal canal, penetrating wounds from the rectum into the perirectal space, or the perforation of a carcinomatous growth or ulcer. All others are preceded by an abscess due to infection conveyed chiefly by way of the lymphatics. The infection may arise in a thrombosed internal pile blood extravasated from a ruptured vein in the submucosa, a fissure at the anal margin, a torn-down anal valve, the lacerated pedicle of a polyp, an ulcerated surface in the sinus of Morgagni, or a puncture or laceration of the mucosa by a foreign body. Occasionally it is a metastatic infection carried by way of the blood stream.

Miles classifies anorectal fistulae as follows:

1. Subcutaneous (a) blind external, (b) blind internal, (c) complete.
2. Submucous (a) blind external, (b) blind internal, (c) complete, (d) bilateral.
3. Intermuscular blind internal.
4. Pararectal (a) blind internal, (b) complete, (c) bilateral.

Chabrol, E., Brocq, P., and Porin, J. The Indications for Cholecystostomy in Jaundice of Infectious Origin (Les enseignements de la cholécystostomie dans les ictères infectieux) *Presse méd.*, Par., 1932, xl, 1053

Surgeons have found that in certain cases of supposed catarrhal jaundice operated upon to eliminate the possibility of obstruction by stone or pancreatic compression, relief of the jaundice has followed promptly after drainage of the gall bladder when no definite findings were made at the operation.

The authors believe that this supposed catarrhal jaundice masks an anaerobic infection. In support of this theory they cite a case of severe jaundice with enlargement of the liver and slight fever in which a biopsy section of the liver was taken and a physicochemical study of the bile was made. The patient was a woman forty-five years old. Laboratory tests had ruled out typhoid and paratyphoid. The cholecystostomy was done on the fiftieth day of the jaundice. The operative findings were negative, but from the very black bile draining from the gall bladder an unidentified anaerobe was cultured. Microscopic examination of the biopsy specimen from the liver revealed an interstitial hepatitis with large Kupffer cells and some hypertrophy in the center of the hepatic lobules which was purely parenchymatous.

In the authors' opinion such acute so-called catarrhal jaundice begins with a cholelithiasis, and the enlargement of the liver is secondary to the mechanical obstruction in the common duct. In experiments on animals they found that a pressure of from 18 to 23 cm. of water in the common duct is sufficient to cause the reflux of bile into the circulation. They therefore suggest that spasm and contraction of the sphincter of Oddi might cause such a reflux under the reflex action of a fissure of the ampulla of Vater or pancreatitis. Drainage of the gall bladder is followed by rapid cure because it relieves the pressure and drains the infection. KELLOGG SPEED, M.D.

Blond, K. Changes in Teaching as to the Function of the Bile Ducts (Wandlungen in der Lehre von der Funktion der Gallenwege) *Arch. f. klin. Chir.*, 1932, clxx, 597

Blond first discusses the problems of the physiology and pathology of the gall bladder and the bile ducts. He reviews the various prevailing theories regarding the function of the gall bladder and points out the numerous contradictions in the observations and their interpretations. He states that the kernel of the entire problem lies in the question as to whether the cystic duct may be considered simultaneously an afferent and efferent channel to the gall bladder. No other duct is known in biology, in which a fluid stream may flow physiologically in both directions. Physiology has not as yet been able to answer positively when the bile flows into the gall bladder and when it flows out.

In the second part of his article Blond discusses the several methods of studying the physiology of

the bile ducts. Much which has been accepted as proved is now no longer tenable, and many conclusions which have been drawn have been contradicted. Cholecystography has also led to many erroneous conceptions as to the physiology of the bile ducts. Therefore our present knowledge of the function of the bile ducts may by no means be considered complete. BODE (Z)

Peracchia, G. Internal Biliary Fistulae (Fistole bilari interne) *Arch. ital. di chir.*, 1932, xxxii, 97

In experiments on dogs the author was able, by means of a modified Murphy button, to produce internal biliary fistulae from 2 to 3 mm. in diameter between the gall bladder and the stomach, small intestine, and colon. He found that fistulae between the gall bladder and the stomach, duodenum, or jejunum remained patent only if there was complete occlusion of the common duct, whereas fistulae between the gall bladder and ileum or colon remained patent whether the common duct was occluded or not. Following the formation of a cholecystogastric fistula no change was found in the gastric juice from six to twelve months later.

In the cases of dogs with cholecystogastric fistulae examination of the blood showed only a mild leucocytosis, whereas in the cases of dogs with fistulae between the gall bladder and intestines it revealed a pronounced increase in the leucocytes and a decrease in the erythrocytes and haemoglobin. The decrease was most marked in the dogs with fistulae between the gall bladder and the ileum or colon.

In all of the animals with fistulae between the gall bladder and the gastro-intestinal tract the irritative and inflammatory changes in the anastomoses which were previously described by Marinelli, Forni, Agnifoglio, and others were noted. The lower the fistula in the gastro-intestinal tract the more severe were the changes. Many of the dogs with fistulae between the gall bladder and ileum or colon died.

In all of the animals with occlusion of the common duct associated with an internal biliary fistula there was a constant dilatation of the extrabiliary bile ducts, whereas the gall bladder retained its normal shape or became decreased in size.

In the dogs with cholecystogastric fistulae histological examination disclosed minimal lesions in the gall bladder and minimal or no lesions in the liver.

The cellular changes were more marked the lower the anastomosis was made in the intestinal tract.

In the cases of dogs with fistulae between the gall bladder and intestines, continuous infection of the gall bladder, extrahepatic ducts, and peritoneum of the liver frequently caused early death.

PETER A. ROST, M.D.

David, V. C. Carcinoma of the Hepatic Duct. *Ann. Surg.*, 1932, xcvi, 381

The author reports two cases of carcinoma of the hepatic duct. In both, the presence of stones in the common duct was suggested by severe colicky pain and intermittent jaundice. At operation, stones

sphincter. Miles has not found it to occur even after complete division of the muscle in the laying open of the main track of an intermuscular fistula. By some, division of the external sphincter is believed to be responsible, but these surgeons evidently overlook the fact that in operations for fissure the external sphincter is generally divided completely without ill effect.

The position of the internal opening of a fistula is of very little consequence in determining the nature of the operation to be performed, but the anatomical situation of the main track in its relation to the musculature of the anal outlet is of the greatest importance. In the operative treatment of a fistula it must be borne in mind that the square area of the surface wound should be made at least twice as large as the square area of the rest of the wound. The most satisfactory way of increasing the surface area of a linear wound consists in making incisions through the skin and subcutaneous tissue at right angles to the line of the main incision. The surface area of a wound may be increased also by removing healthy skin around the wound made by laying open the main track of the fistula and the offshoots from it.

Of great importance in the results of operation is the after treatment of a fistula wound. The primary object to be obtained is healing of the operative wound progressively from its deepest part throughout its entire extent. When the wound is superficial no difficulty is encountered in this respect as the healing process proceeds without interruption until the granulation tissue becomes level with the surrounding skin and the surface is completely covered by epithelium. In cases in which the main track lies at a considerable depth and pursues a curved course the surfaces of the more superficial parts of the wound are apt to come into contact with one another and adhere unless they are kept apart. As a result, the deepest part of the wound may escape obliteration and the main track of the fistula may be re-established by a bridging process. In order to prevent bridging the surfaces of the superficial portions of the wound should be kept apart by interposing a thin layer of cotton wool or a strip of gauze between them. On no account should the wound be tightly packed. Tight packing may be done only immediately after completion of the operation—never later. It impedes the healing process and prevents the formation of granulation tissue so that the wound ultimately heals with a depressed scar which, especially when it traverses the anal orifice, is one of the most common causes of impairment of control after operations for anorectal fistula.

A fistula wound which is healing normally is practically free from suppuration. Pus welling up in the wound is an indication of bridging, the presence of an offshoot that escaped detection during the operation, or the formation of an offshoot subsequent to the operation as the result of the breaking down of infected tissue. Therefore whenever an excess of pus is found the wound should be carefully explored with a probe in order that the cause of the suppuration

may be ascertained and dealt with by a secondary operation without delay.

Miles discusses the essential details in the treatment of each type of anorectal fistula.

MARTIN L. LICHTENSTEIN, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Buettner G.: Further Contributions to the Diagnosis and Surgical Pathology of the Ligamentum Teres Hepatis. Singultus as a Symptom of the Ligamentum Teres (Weitere Beiträge zur Diagnostik und chirurgischen Pathologie des Nabelbandesystems. Der Singultus als Ligamentum-teres-Symptom) *Beitr. z. Klin. Chir.* 1932 *Chir.* 64:2.

Starting with the studies of Schmieden and Peiper on the pathology of the Ligamentum teres hepatis, the author has attempted to make a clinical diagnosis of diseases of this ligament. He was led to make this attempt by a case of gastric ulcer which had perforated into the Ligamentum teres. In addition to the ulcer symptoms in this case the following symptom triad was present: (1) pain extending downward into the umbilicus, (2) subternal burning (heart burn) with the eructation of watery mucus, and (3) singultus.

On the basis of these symptoms, and particularly mild singultus, Buettner made a diagnosis of traction to the epigastrium from tension of the Ligamentum teres in seven cases. In all, his diagnosis was confirmed at operation. In one of the cases the traction on the liver was due, not to a taut Ligamentum teres, but to a tense omental band which pulled on the gall bladder. Of the six other cases, four were cases of supra-umbilical epigastric hernia in which the fatty coat of the Ligamentum teres was caught in the hernial sac. In one of the two remaining cases the Ligamentum teres was shortened. In the other the falciform ligament was adherent to the abdominal wall and after its division the liver rose several centimeters.

Following operative release of the traction in the upper abdomen all of the patients were relieved of their symptoms. In the last case, which was particularly conclusive, cardiospasm had been demonstrated roentgenologically. The findings supported the author's theory that an essential and probably the primary part of the singultus double reflex has its origin in irritation of the vagus which supplies also the cardiac and oesophageal musculature. In the absence of anatomical evidence between the vagus and phrenic nerve, a central reflex arc must be assumed. The observation cited above that a so-called gastric neurosis may be not only simulated, but also initiated by traction to the epigastrium.

In conclusion Buettner says that the origin of obscure epigastric symptoms in abnormal tension of the Ligamentum teres may be recognized with considerable certainty and the symptoms may be relieved by operative release of the traction.

BUETTNER (2).

Chabrol, E, Brocq, P, and Porin, J The Indications for Cholecystostomy in Jaundice of Infectious Origin (Les enseignements de la cholécystostomie dans les icteres infectieux) *Presse med*, Par, 1932, xl, 1053

Surgeons have found that in certain cases of supposed catarrhal jaundice operated upon to eliminate the possibility of obstruction by stone or pancreatic compression, relief of the jaundice has followed promptly after drainage of the gall bladder when no definite findings were made at the operation

The authors believe that this supposed catarrhal jaundice masks an anaerobic infection In support of this theory they cite a case of severe jaundice with enlargement of the liver and slight fever in which a biopsy section of the liver was taken and a physiochemical study of the bile was made The patient was a woman forty-five years old Laboratory tests had ruled out typhoid and paratyphoid The cholecystostomy was done on the fiftieth day of the jaundice The operative findings were negative, but from the very black bile draining from the gall bladder an unidentified anaerobe was cultured Microscopic examination of the biopsy specimen from the liver revealed an interstitial hepatitis with large Kupfer cells and some hypertrophy in the center of the hepatic lobules which was purely parenchymatous

In the authors' opinion such acute so-called catarrhal jaundice begins with a cholelithiasis, and the enlargement of the liver is secondary to the mechanical obstruction in the common duct In experiments on animals they found that a pressure of from 18 to 23 cm of water in the common duct is sufficient to cause the reflux of bile into the circulation They therefore suggest that spasm and contraction of the sphincter of Oddi might cause such a reflux under the reflex action of a fissure of the ampulla of Vater or pancreatitis Drainage of the gall bladder is followed by rapid cure because it relieves the pressure and drains the infection KELLOGG SPEED, M D

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PETER A. ROSE, M D

David, V C Carcinoma of the Hepatic Duct *Ann Surg*, 1932, xcvi, 381

The author reports two cases of carcinoma of the hepatic duct In both, the presence of stones in the common duct was suggested by severe colicky pain and intermittent jaundice At operation, stones

were found in the gall bladder in one case, but not in the other. In neither case were there stones in the common duct, but in both there was white bile. The carcinoma of the hepatic duct was manifested by a relatively small hard fibrous mass which was diagnosed clinically as scar tissue from long-standing inflammation. In both cases there were postoperative hemorrhages and in one case these were fatal.

STANLEY H. MORTON, M.D.

De Takats, G., and Mackenzie, W. D.: *Acute Pancreatic Necrosis and Its Sequelae*. *Ann Surg.*, 1932, *xcv*, 418.

The authors report a study of twenty-two cases of acute pancreatic necrosis and eight cases of sequelae of that condition which were operated upon during a ten-year period by nine surgeons.

Half of the patients were between forty and sixty years of age and eighteen were females.

In nineteen cases there had been recurrent attacks of pain in the upper part of the abdomen or the right hypochondrium. The pain of acute pancreatic necrosis is excruciating. In twelve cases there was jaundice. Muscle rigidity does not belong to the typical picture of the acute condition. It usually indicates purulent peritonitis. The erythrocyte count is often above the normal because of dehydration or shock. The leucocyte count varies greatly. The blood sugar and non-protein nitrogen are usually high. The determination of urinary diastase is probably the best laboratory diagnostic test for if it is negative within from twenty-four to thirty-six hours after the onset of symptoms, pancreatic disease is excluded. X-ray examination aids in excluding gas-

tric and duodenal perforations and intestinal obstruction.

In none of the twenty-two cases of acute pancreatic necrosis reviewed was the diagnosis made before operation. In fifteen, the condition was diagnosed as acute cholecystitis or common duct stone. In three of the eight cases of sequelae of acute pancreatic necrosis a correct diagnosis was made by the use of a barium meal.

With regard to the time at which operation should be done the authors suggest the following rules:

1. Never operate upon a patient in the initial shock.

2. If all diagnostic measures point to pancreatic necrosis, delay is permissible until it becomes localized or cystic or gangrenous parts must be removed.

3. If the diagnosis is uncertain, early operation should be performed because of the danger of overlooking intestinal perforation.

4. If the attack is mild wait for recovery and then operate for biliary tract infection.

The first object of surgical interference is drainage of the infected biliary tract. This is done most easily and quickly by cholecystostomy. The less surgery that is performed the better, but drainage of the omental bursa or the capsule of the pancreas is often of value. Drainage of the peritoneal cavity is of no benefit.

In the twenty-two cases of acute pancreatic necrosis reviewed the mortality was 36.6 per cent. In the eight cases of late sequelae there were three deaths. Late sequelae are usually related to the biliary tract but include sequestration of gangrenous pancreatic tissue.

STANLEY H. MORTON, M.D.

GYNECOLOGY

UTERUS

Gruenstein, J. The Spread of Tuberculosis in the Uterus (Beitraege zur Frage der Ausbreitung der Tuberkulose im Uterus) *Ztschr f Geburtsh u Gynaek*, 1932, cv, 128

After a brief discussion of the various possibilities in the spread of tuberculosis in the uterus, the author reports a case of tuberculosis of the portio. The patient was a woman thirty-four years of age who had always been healthy, had menstruated regularly, and had never been pregnant. When a period was missed she assumed that she was pregnant. Eight days before she consulted the author she had had a yellowish discharge. On examination, a nodular, crater-like, bloody mass was found on the portio (carcinoma?). Biopsy revealed a glandular erosion and epithelioid tubercles with giant cells. A total extirpation was performed with preservation of the left adnexa. Microscopical examination showed no tubercles in the corpus and no signs of further spread of the tuberculosis of the uterus. Clinically, there were no other signs of tuberculosis.

In another case the question of transition of tuberculosis of the portio into carcinoma was brought up (compare transition of lupus into carcinoma). About half a year previous to the patient's admission to the hospital, tuberculosis was found during an exploratory curettage. The author discovered a cauliflower carcinoma of the portio.

In conclusion Gruenstein reports a case of tuberculosis of the uterus in which the mucous membrane became atrophic following irradiation and the tubercles then remained only in the muscularis.

HANS O. NEUMANN (G)

Bernard, R. Fibromata and the X-Rays. Some Cases of Radiotherapy for Pelvic Tumors Incorrectly Diagnosed as Fibromata (Fibromes et rayons X, quelques cas malheureux de radiothérapie sur les tumeurs pelviennes prises à tort pour des fibromes) *Bull Soc d'obst et de gynec de Par*, 1932, xxi, 394

The author reports seven cases in which a pelvic tumor thought erroneously to be a fibroma was treated with the roentgen rays. In the first case the neoplasm was a unilocular cyst, in the second and third cases, an encysted hæmatocele, in the fourth and fifth cases, a cancer of the body of the uterus, and in the sixth case, a degenerated dermoid cyst. In the seventh case there was a fibroma with two cysts, one of which showed cancerous changes.

The consequences of roentgen irradiation of tumors diagnosed incorrectly as uterine fibromata are:
1. Loss of time. In cases of malignancy, this is serious.

2. The production of the artificial menopause in a benign condition.

3. The formation of adhesions which increase the risk of subsequent operation.

4. The possibility of causing malignant change in benign ovarian tumors.

The author emphasizes that when the diagnosis is doubtful surgery is the treatment of choice. The diagnosis is aided by the use of lipiodol. If a tumor thought to be a fibroid has not decreased in size after the third or fourth treatment, the irradiation should be stopped.

JAMES B. MASON, M.D.

Adler, L. The Treatment of Cervical Cancer by Operation and Irradiation (Die Behandlung des Collumcarcinoms mit Operation und Bestrahlung) *Wien klin Wchnschr*, 1932, l, 289

As a representative of the Schauta school, which systematically performs the radical vaginal operation for cancer of the cervix, the author discusses the results obtained and obtainable by this method and compares them with the results obtained by the abdominal operation for cancer. For his comparison he uses Wertheim's statistics based on 1,500 cases treated in the period from 1899 to 1922 (compiled by Weibel), the data of the First Gynecological Clinic of Vienna (Schauta and Adler) up to 1921, and the cases treated on his own service at the Wilhelminenspital, Vienna, since 1921.

In the period from 1901 to 1926, 1,894 patients with cancer of the cervix came for treatment. One thousand of them were subjected to the radical vaginal operation. The operative mortality fell from 11.37 per cent in the first five years to 3.51 per cent in the period between 1916 and 1921 and averaged 6.1 per cent. The operability rose from 47.5 to 61.7 per cent. The incidence of relative cure following operation was between 35 and 50 per cent, and the incidence of absolute cure rose from 16.6 to 50 per cent. If the first year in which each type of operation was used is omitted, the primary mortality was 13 per cent in 500 cases in which the Wertheim operation was done and 3.95 per cent in 555 cases in which the vaginal operation was done. Under similar conditions, the incidence of absolute cure was 18.56 per cent after the Wertheim operation and 19.8 per cent after the Schauta operation. In summarizing the author says that the radical vaginal operation can be performed in a somewhat higher percentage of cases, yields an incidence of absolute cure which is equal to that yielded by the abdominal operation, and has an operative mortality less than a third that of the abdominal operation.

In comparing the results of operation with those obtained by irradiation, the author refers to the various reports in the literature and comes to the

conclusion that the results of irradiation may perhaps approach those obtained by surgery but never surpass them. He points out the considerable advantages of postoperative irradiation, a method of treatment which he has used since 1913. However he states that if large doses are used there is danger of fistula formation, and if small doses are used the results are little better than those obtained without postoperative irradiation.

Adler usually introduces the radium during the operation, after closure of the peritoneum. He places 50 mgm. of radium filtered with 1.5 mm. of brass in each parametrial wound and leaves it for from six to eight hours. Sometimes three or four radium containers are used. In addition, deep irradiation with both radium and the roentgen rays is begun from six to eight weeks after the operation. With this method the author has increased the incidence of relative cure from 43 to 58.8 per cent and the incidence of absolute cure to 31.8 per cent.

RUKE (G)

ADRENAL AND PERIUTERINE CONDITIONS

Pantelin, J. N.: *Physiotherapy a Conservative Method of Treating the Uterine Adenoma and Its Results (La physiothérapie, méthode conservatrice de traitement des adénomes utérins et ses résultats)*. *Gynec et obst* 1932 27:4, 1 a.

This report is based on 8,676 cases of inflammation of the uterine adenoma treated by physiotherapeutic methods at the Institut Scientifique Régional de Monaco pour la Protection de l'Enfance et de la Maternité. The inflammations were divided into 2 groups: (1) simple inflammations of the tubes and ovaries, and (2) inflammations of the adenoma and of the peritoneum covering them, i.e. those complicated by tumor formation and adhesions. Hydro-salpinx, pyosalpinx, and pelvic peritonitis were excluded. No fewer than 30 physiotherapeutic methods or combinations of methods were used. These included the use of a tampon of mud, diathermy by the vaginopubic technique, ionogalvanization with a vaginal electrode and potassium iodide, warm vaginal irrigations, pelvitherapy light baths, and sitz baths. The methods are described, and the indications for each are summarized.

The attempt was made to answer the following questions:

1. What is the incidence of clinical and functional improvement obtained by physiotherapy in chronic inflammations of the adenoma?

2. Has treatment by combined methods any advantages over treatment by a single method?

3. What is the result obtained by the same treatment in cases of simple salpingo-oophoritis and cases of salpingo-oophoritis complicated by adhesions?

4. What is the method giving the best results? The findings are summarized as follows:

1. Of the women treated by physical agents for inflammation of the adenoma 2.3 per cent became pregnant. Anatomical-functional improvement re-

sulted in 32.2 per cent, anatomical improvement in 4 per cent, functional improvement in 37 per cent, no improvement in 21.4 per cent, and aggravation of the condition in 3.2 per cent.

2. The incidence of good results was 3 per cent greater when combined methods were used than when a single method was employed.

3. In general, good results were obtained in 2 per cent more of the cases of uncomplicated salpingo-oophoritis than in those of salpingo-oophoritis complicated by adhesions, and when certain methods were used they were obtained in 3 per cent more of cases of the former type than in those of the latter type.

4. The best results were obtained by the use of vaginal tampons of mud, and the next best, in order by ionogalvanization, diathermy, vaginal pelvitherapy, light baths, and sitz baths.

5. The disappearance of adhesions was most frequent after the use of tampons of mud, next most frequent after ionogalvanization, and third most frequent after diathermy.

6. The longer the treatment was continued the better were the results. GAYLORD S. BATES, M.D.

Elbino, A., and Næsgaard, L.: *Torsion of Ovarian Cysts in the Child (Torsion des kystes ovariens chez l'enfant)*. *Rev franç de gynéc. et d'obst* 1932 27:2, 258.

According to François, torsion of ovarian cysts is most frequent between the ages of ten and fifteen years, whereas according to Ombredanne, it is most frequent between the ages of two and eighteen years. Its incidence is higher in children than in adults, being 26 per cent in the former and from 6 to 12 per cent in the latter. It occurs most commonly in cases of dermoid cysts of medium size which are abdominal and have long pedicles.

A clinical diagnosis is scarcely ever possible unless the tumor has been previously known to be present or can be palpated. It can seldom be palpated. As a rule the clinical picture is that of an acute abdominal accident such as appendicitis or intestinal obstruction due to volvulus or intussusception. Severe shock is constant in the cases of adults, but usually absent in those of children.

The physical signs are variable. Abdominal rigidity may be present or absent. Quite characteristic is extreme sensitivity of the cul-de-sac to rectal palpation. However a mass may be mistaken for an appendiceal abscess. In contrast to appendicitis there is an initial severe pain followed by vomiting. As a rule urination is painful.

The treatment is surgical, and the prognosis uniformly good. ALBERT F. DE GROOT, M.D.

Gosseet, A., and Wallon, K.: *A Vegetating Cyst of the Ovary Treated by Radium Irradiation and Surgery (Kyste de l'ovaire végétant traité par radium-chirurgie)*. *Bull Soc d'obst. et de gynéc. de Paris* 1932 27: 421.

The authors state that in cases of ovarian cyst with peritoneal metastases, surgical treatment

should be supplemented by radium irradiation. They describe their technique and report a case in which it was used successfully.

Following operative removal of the primary growth and of all removable local metastases, the authors place large drainage tubes at the site of unremovable metastases and close the abdomen in layers. After an interval of about forty-eight hours to allow the patient to recover from the shock of the operation, they place sounds containing radium capsules at the bottom of the tubes. Every day thereafter the sounds are removed and aspiration is done through the drains. The radium therapy is generally continued for about a week.

The patient whose case is reported was a woman sixty-four years of age. Operation revealed a vegetating malignant cyst of the right ovary with peritoneal and pelvic metastases. The diagnosis was confirmed by pathological examination. Removal of the ovary was followed by radium therapy. Five years later the patient was found to be in excellent health except for an incisional hernia.

In the discussion of this report, PETIT-DUTAILLIS spoke on the problem of the radium therapy of carcinoma of the uterus. He stated that even when this treatment is given by experts it is associated with a mortality of 7 per cent from septicæmia. He is opposed to the intra-abdominal introduction of radium as he believes it may favor infection. To treat the cul-de-sac, uterosacral region, and hypogastric pedicles, he has found the vaginal application of radium satisfactory. For treatment of the uterus and its appendages, he introduces the radium within the uterus. He cures the cervix or fundus, introduces two large Carrel drains, and surrounds the drains and packs the vaginal cavity with a thin rubber dam. No gauze is employed. To overcome the anæmia and intoxication, he gives small transfusions, a milk and vegetable diet, and adequate laxatives and diuretics. Prior to the intervention he uses Delbet's solution.

DOUAY stated that the authors' report confirmed the observations at the Broca Hospital, where the intra-abdominal application of radium was first used to combat carcinoma in 1920. He reported three cases of ovarian tumors with pelvic metastases which responded to this treatment. He cited also a case in which complications developed. In the latter, the radium irradiation caused a fibrosis of the small intestine which resulted in obstruction necessitating resection of the involved loop. However, in spite of the possibility of such complications, Douay believes that the method is of value in desperate cases.

JAMES B. MASON, M.D.

EXTERNAL GENITALIA

Chang-ken Chi. Carcinoma of the Vulva. *Chinese M. J.*, 1932, *dvj*, 584.

Carcinoma of the vulva is extremely malignant. It is the most common neoplasm occurring on the external genitalia. The author reports eight cases. The lesion occurs most frequently on the inner sur-

face of the posterior half of the labium majus or in the sulcus between the labium majus and the labium minus. It is usually a disease of old age, but the author's youngest patient was only twenty-eight years old.

Histologically, carcinomata of the vulva are of the following three types:

1 Squamous-celled carcinoma, characterized by the formation of numerous epithelial pearls.

2 Medullary carcinoma, springing from undifferentiated epithelial cells.

3 Adenocarcinoma, arising from glandular structures about the external genitals (sweat glands, mucous glands, Bartholin glands).

The growth may be infiltrating or everting. The infiltrating type is the more malignant. It forms deep ulcers which infiltrate the subcutaneous tissue and spread rapidly to the tributary lymph glands, and in spite of radical operation is prone to recur and terminate fatally.

Trauma to the external genitalia is believed to be among the chief causes of carcinoma of the vulva. Undoubtedly, also, long-continued irritation, such as that due to pruritus, is often a factor. Leukoplakia frequently precedes the condition.

The most common symptoms are itching, a foul discharge, pain, and bleeding. The diagnosis may be confirmed by microscopic examination. Rapid growth of the lesion with cachexia and involvement of the inguinal glands is very suggestive. The prognosis is unfavorable. Recurrence is almost inevitable. The best treatment in early cases in which the general health is good is excision of the vulva with extensive dissection of the inguinal glands on both sides. Irradiation with the X-rays and radium may also be used.

HARRY W. FINE, M.D.

MISCELLANEOUS

Thomsen, E. Studies of the Female Urethra Especially as Regards the Closing Mechanism of the Bladder. *Acta radiol.*, 1932, *xiii*, 433.

The author reports a roentgenographic study of the closing mechanism of the female bladder and reviews Natvig's anatomical and physiological studies of urinary incontinence in women. His own findings seem to confirm the theory which he advanced previously that the closing mechanism is primarily a function of the urethra itself and only secondarily of its surroundings, and that the mechanism fails when the angular bend in the urethra is absent. He says that in the operative treatment of urinary incontinence in the female the effort must be made to support or tighten the anterior wall of the urethra.

Campbell, A. D. Further Studies on the Anterior Pituitary-Like Hormone, with Special Reference to Irregular Uterine Bleeding. *Lancet*, 1932, *ccxxiii*, 561.

The author divides cases of uterine bleeding into the following groups:

Group A. Cases in which the length of the cycle is normal, the amplitude of the flow is excessive, and the duration of the flow is normal.

Group B. Cases in which the length of the cycle is normal, the amplitude of the flow is excessive, and the duration of the flow is prolonged.

Group C. Cases in which there is constant bleeding in addition to a cycle of normal length with a flow which is excessive but of normal duration.

Group D. Cases in which the length of the cycle is short (from sixteen to twenty-four days) the amplitude of the flow is normal or excessive, and the duration of the flow is normal or prolonged.

Group E. Cases in which the cycle is short (fourteen days) the amplitude of the flow is normal and the duration of the flow is irregular.

Group F. Cases in which there is cyclic intermittent bleeding and the amplitude and duration of the flow are irregular.

Group G. Cases with continuous excessive hemorrhage.

Group G is subdivided into the following four subgroups:

Subgroup 1. Cases with concurrence of regular cycles of varying length of interval and unduly prolonged duration of the flow.

Subgroup 2. Cases with concurrence of irregular periods of metrorrhagia.

Subgroup 3. Cases with spontaneous bleeding either after a normal menstrual cycle or more commonly after a period of amenorrhea.

Subgroup 4. Cases of bleeding of puberty.

Campbell treated such cases with the hormone resembling the hormone of the anterior lobe of the pituitary gland, using preparations of different strengths, but giving at least 40 day rat units per injection. The best results were obtained by giving an injection every day for seven days and then every second day until the patient had passed through two menstrual cycles. When the menstrual flow became normal in duration and amplitude, the treatment was discontinued.

Campbell's conclusions with regard to this treatment are summarized as follows:

1. There are several types of irregular uterine bleeding which are distinguished by the menstrual history. In the selection of cases for the treatment a correct diagnosis is essential. The organs in the pelvis must be found normal on palpation and the presence of neoplasms of the uterus must be excluded.

2. Menorrhagia and metrorrhagia due to inflammatory disease are aggravated by the treatment.

3. Metropathia hemorrhagica responds particularly well. Pain is interpreted to indicate that the tone of the musculature has returned to normal and that the hyperplastic endometrium is being rapidly expelled.

4. In the metrorrhagia of puberty the response is less consistent and the treatment is followed by periods of amenorrhea.

5. Menopausal symptoms are alleviated.

6. Mastalgia, if accompanied by a disturbance of the menstrual cycle, frequently subsides.

7. In simple polymenorrhea no permanent improvement is noted. The symptoms of dysmenorrhea are intensified.

8. There is no effect on pregnancy and no effect on normal menstrual cycles as regards interval, amplitude, or duration. No local or constitutional symptoms are observed.

9. The effect of the hormone resembling the hormone of the anterior lobe of the pituitary gland is believed to cause the ovary to resume a complete and balanced endocrine activity.

ALBERT M. VOLLMER, M.D.

Pierre, L. M. Colon Bacillus Infections of the Female Genitalia in the Absence of Pregnancy (Les infections colibacillaires de l'appareil génital chez la femme en dehors de la grossesse). *En français, J. Gynec. Obstet.* 93, avril, 1920.

Pelvic infections are usually mixed infections occurring after the acute phase produced by the gonococcus or streptococcus has passed. The most frequent secondary infecting agent is the colon bacillus. Constipation resulting from mechanical interference with intestinal function and chemical changes are important factors. The greater frequency of colon-bacillus infections in women than in men may be explained by the fact that women usually prefer a diet of milk, fruit, and vegetables, which is alkali producing, whereas men are more prone to choose a diet of meat, which is acid producing. Colon-bacillus infections are favored in women also by biliary disturbances resulting in a decrease in the production of bile which has an antiseptic action in the intestine, and by the sedentary habits of most women.

Colon-bacillus infections reach the cervix and adnexa chiefly by the ascending route from the rectum and bladder, but blood-stream infection may result from interstitial lesions. The relative infrequency of the hematogenous route of spread is accounted for by the antiseptic properties of the blood. Lymphatic and direct extension also occur.

Vaginitis, cervicitis, and salpingitis are more commonly the result of colon bacillus infections than has hitherto been supposed. This is true especially of these infections occurring in childhood, when infections due to specific organisms (gonococcus) are rare.

Calantri has described a characteristic sequence of events in colon-bacillus infections which he terms the entero-urogenital syndrome. This syndrome has the following three phases:

1. An intestinal phase, characterized by constipation, colitis, and focal infection in the appendix or gall bladder.

2. A urinary phase, characterized by cystitis, polyuria, dysuria, and bacilluria.

3. A genital phase characterized by chronic leucorrhea.

Atrophic and asthenic women are more prone to colon-bacillus infections than others.

The diagnosis rests upon the history, the course of the condition (entero-urogenital syndrome), and the finding of the colon bacillus. In some cases the intestinal and genital phases are most marked. These are characterized by chills, elevations of the temperature, and diarrhoea recurring during each premenstrual period. The intermittent acute attacks are exacerbations of a chronic infection brought about by the pelvic congestion preliminary to menstruation.

HAROLD C. MACK, M.D.

Colanéri, X. The Treatment of Colon-Bacillus Infections in the Female (*Thérapeutique des manifestations colibacillaires chez la femme*). *Revue franç. de gynéc. et d'obst.*, 1932, XXVII, 313.

While colon-bacillus infections in the female have their origin in the intestine they may involve distant as well as neighboring organs. The intestine being the source of the organisms, the author directs his treatment toward the intestinal tract and the "bacterial reservoirs," the appendix and gall bladder. Vaccination of the intestinal tract by the oral administration of vaccines appeals to him as the most logical measure. The treatment must be intensive and prolonged, and must be aided by regulation of the diet to reduce its fermentable constituents and

by measures to correct constipation, such as the institution of regular habits, massage of the abdomen, gymnastics, and the administration of mineral oil.

For intestinal vaccination the author prefers autogenous vaccines prepared from organisms present in the urine. The organisms in the urine are said to be attenuated and best suited for the preparation of vaccines. From 300 to 600 billion organisms are given by mouth, preferably in divided doses, over a period of twenty-four hours. The administration of magnesium chloride in gelatin capsules acidifies the intestinal mucosa and aids the action of the vaccines. This method of treatment is carried out over a period of at least twenty days and is repeated at frequent intervals for many months.

Improvement of the intestinal symptoms quite often results in cessation of the pelvic symptoms. When the pelvic symptoms persist, the genitalia should be treated directly with vaccines. This is done by the use of vaginal or cervical tampons saturated with vaccine or intra-uterine instillations of vaccine. Not infrequently these procedures are followed by mild elevations of the temperature. Subcutaneous administration of vaccine is also beneficial.

HAROLD C. MACK, M.D.

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Group C. Cases in which there is constant bleeding in addition to a cycle of normal length with a flow which is excessive but of normal duration.

Group D. Cases in which the length of the cycle is short (from nineteen to twenty-four days) the amplitude of the flow is normal or excessive and the duration of the flow is normal or prolonged.

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3. Metropathic menorrhagia responds particularly well. Pain is interpreted to indicate that the tone of the musculature has returned to normal and that the hyperplastic endometrium is being rapidly expelled.

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ALBERT M. VOLLMER, M.D.

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Colon-bacillus infections reach the cervix and adnexa chiefly by the ascending route from the rectum and bladder but blood-stream infection may result from intestinal lesions. The relative infrequency of the hematogenous route of spread is accounted for by the antiseptic properties of the blood. Lymphatic and direct extension also occur.

Ulvovaginitis, cervicitis, and salpingitis are more commonly the result of colon-bacillus infections than has hitherto been supposed. This is true especially of these infections occurring in childhood, when infections due to specific organisms (gonococcus) are rare.

Calanén has described characteristic sequences of events in colon bacillus infections which he terms the entero-uterine syndrome. This syndrome has the following three phases:

1. An intestinal phase, characterized by constipation, colitis, and focal infection in the appendix or gall bladder.

2. A urinary phase characterized by cystitis, polyuria, dysuria, and bacteriuria.

3. A genital phase characterized by chronic leucorrhea.

Anemic and asthenic women are more prone to colon-bacillus infections than others.

Whitby, L. E. H. *Anæmias of Pregnancy* *J Obst & Gynec Brit Emp*, 1932, xxxix, 267

Some degree of anæmia is common during pregnancy. The severe forms are rare in temperate climates and are not to be confused with true Addisonian anæmia to which they show some resemblance. As the immense store of iron in the newborn is laid down chiefly in the last three months of pregnancy, it is during this period of time that anæmia is most liable to develop and the iron requirements are the greatest. Examination of the hæmoglobin and red cells should be a part of the prenatal care.

In some cases serious symptoms of anæmia do not develop until after delivery. Among the common symptoms of anæmia in pregnancy is fever. Unless the condition is treated, premature labor may occur.

The author classifies the anæmias of pregnancy as follows:

1. Pernicious (a) plastic, (b) hypoplastic, and (c) aplastic
2. Chlorotic.
3. Atypical

The hypoplastic type of pernicious anæmia recurs in succeeding pregnancies. The blood picture of the pernicious type shows a severe anæmia with a high color index and megalocytosis.

Women with severe anæmia of pregnancy can usually be carried to term or near enough to term for the delivery of a viable baby by proper treatment. In untreated cases the mortality is high.

The cause of the severe anæmias of pregnancy is unknown, but may be a combination of factors rather than a specific entity. The hypoplastic type of anæmia is probably the result of a bone-marrow hypoplasia due to a chronic anæmia-producing condition which is intensified by the pregnancy. The chlorotic type is probably due to failure of production or utilization of the hæmatinic factor.

The treatment is dependent upon the type of the anæmia. In the hypoplastic type, blood transfusions, liver, and iron should be given. Transfusion should accompany all operative procedures. In the chlorotic anæmia the administration of iron with or without liver will usually effect a cure. Anæmia of the plastic type will often be relieved by the administration of liver until delivery and then will become cured.

The author reports four cases to illustrate the three types of severe anæmia of pregnancy.

T. FLOYD BELL, M.D.

Reeb, M., and Metzger, A. *Convulsions of Cerebral or Meningeal Origin Occurring During Gestation and Simulating Puerperal Eclampsia* (*Crisis convulsives d'origine mningée ou cérébrale au cours de la gestation simulant l'éclampsie puerpérale*) *Rev franç de gynéc et d'obst*, 1932, xxvii, 341.

Ordinarily, convulsions and coma occurring in a woman past the sixth month of pregnancy justify a diagnosis of eclampsia. However, three cardinal

symptoms must be present—hypertension, albuminuria, and œdema. In the absence of any one of these, this diagnosis is doubtful.

The authors report two cases to illustrate the difficulties in the diagnosis.

The first was that of a woman twenty-eight years old who was seized suddenly with delirium and convulsions followed by prolonged coma between the seventh and eighth month of pregnancy. One year previously the patient had had acute hæmorrhagic nephritis. At the time of the attack of convulsions during pregnancy her temperature was 104, her pulse 120, and her blood pressure 125-70. The urine contained traces of albumin. Because of the patient's agitation, spinal puncture was impossible. A diagnosis of eclampsia having been made in consultation with a neurologist, cesarean section was done. The operation was well borne, but the coma continued and the patient died the following day. Autopsy revealed a purulent meningitis.

The second case was that of a primipara in the sixth month of pregnancy who was found unconscious on the floor with her clothing blood stained and her vagina filled with blood. When the patient was taken to a hospital she remained in a state of semi-coma with much agitation. The left side of her body, including her face, was flaccid and completely paralyzed. Twelve hours after her admission a series of convulsions occurred, almost complete anuria developed, and large quantities of albumin and casts appeared in the urine. The blood pressure was 130-80. A diagnosis of eclampsia with cerebral hæmorrhage was made and the pregnancy interrupted by cesarean section. After four days the general condition improved and consciousness returned. After about fifteen days the paralysis began to decrease, and by the end of two months recovery was almost complete.

From the character and rapid evolution of the symptoms in this case it appeared certain that the disturbance was of circulatory origin and had caused only a limited destruction of tissue. The cause remained obscure until the patient admitted that she had attempted to produce abortion by injecting strong lysol solution into the cervix. The authors believe that a fluid embolus reached the brain, affecting principally the region of the peduncles or the pons.

ALBERT F. DE GROAT, M.D.

Arnold, J. O., and Fay, T. *Eclampsia, Its Prevention and Control by Means of Fluid Limitation and Dehydration* *Surg, Gynec & Obst*, 1932, lx, 129.

Exploration during the terminal stage of eclampsia has shown the brain to be grayish-white (anæmic) and œdematous and often associated with excessive amounts of extra-arachnoid and subarachnoid cerebrospinal fluid. Pathologically, the eclamptic brain differs little from the "wet brain" or cerebral œdema found in other well-recognized hydration states such as the acute alcoholic wet brain, status lymphaticus, acute toxic hydration states in children, and status

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Scheffey, L. C., Morgan, T. R., and Stimson, C. M.:
An Analysis of a Series of Eighty Two Cases of
Ectopic Pregnancy. *Am J Obs. & Gynec.* 93:1
191-102.

In a study of eighty-two consecutive cases of ectopic pregnancy it was found that the incidence of this condition in relation to gynecological cases admitted to the Jefferson Medical College Hospital, Philadelphia, was 2.19 per cent. Seventy-four and three-tenths per cent of the patients were between the ages of twenty-three and thirty-five years. A prolonged period of sterility was not the rule prior to the ectopic pregnancy. With increased purity the occurrence of ectopic pregnancy was increased.

Etiological factors were suggested by a history of old pelvic infections of tubercular, postpartal, or postabortal origin in 30 per cent of the cases, prior operative procedures in 37.7 per cent, and ovarian or uterine tumors disclosed at operation in 8.5 per cent. In about two-thirds of the cases, obstruction to the passage of the ovum due to inflammatory or adhesive changes in or about the tubes was suggested by the history and the operative findings.

Abdominal or pelvic pain was present in all cases. Irregular vaginal bleeding or spotting, either following a missed period or occurring prior to, or at the time of the next expected period, was reported by 83 per cent of the patients. In four out of five cases the menstrual history prior to the aberration caused by the ectopic pregnancy was normal. Syncope occurred in one-fourth of the cases. Concomitant signs of pregnancy were infrequent.

Abdominal tenderness was found in 85 per cent of the cases, but rigidity was present in fewer than 50 per cent. Pelvic masses were present in half of the cases, but were associated with tenderness in only one-third.

The blood counts, blood-pressure estimations, temperature and pulse rate were similar to those reported by others, but the sedimentation test did not prove of definite value. The ratio of tubal rupture to tubal abortion was 3.3:1. In 30.2 per cent of the cases abnormalities were found in the adnexa on the other side at the time of operation.

Autotransfusion has been abandoned in the treatment if there is any question of infection. Except in a case of collapsed lung, postoperative complications were not unusual in character and the postoperative period of convalescence was usually not prolonged. The total mortality was 4.87 per cent, and the operative mortality 2.5 per cent.

A correct pre-operative diagnosis was made in 75.7 per cent of the cases, and in the majority of these operation was performed within twenty-four

hours. In the cases diagnosed incorrectly the condition was confused most often with pelvic inflammatory disease and next most frequently with incomplete abortion. E. L. COUGHLIN, M.D.

Paroli, G.: Clinical Considerations of Extra-Uterine Pregnancy in the Presence of Active Infection (Considerazioni cliniche sulle gravidanze extra-uterine con infezione in atto). *Riv. Ital. di ginec.* 1931: 219-101.

Paroli reports thirteen cases of extra-uterine pregnancy complicated by active infection which were observed in the Gynecological and Obstetrical Clinic of the Royal University of Florence in the period from 1925 to October, 1931. The symptoms are those of the two conditions. Pain and fever are always present. Other symptoms may be mild or absent. In the diagnosis it is necessary to rule out especially a cystic tumor of the ovary twisted on its pedicle or undergoing necrosis. A definite diagnosis can be made only by exploratory operation. The infection is usually due to colon bacilli from a focus in the abdomen or pelvis, but occasionally is due to the bacteria of influenza, pneumonia, or typhoid or the streptococcus or gonococcus.

The treatment usually indicated is early surgical intervention. Occasionally expectant treatment is justifiable in mild or obscure cases. The author believes that in the surgical treatment neither the abdominal nor the pelvic approach should always be used to the exclusion of the other. The abdominal operation should be followed by drainage.

EUGENE T. LAMOT, M.D.

Lévy-Solal and Mayer: The Metabolism of Calcium in the Pregnant Woman. Its Variations with Oldness and Convulsions (Le métabolisme du calcium chez la femme enceinte. Ses variations avec les accidents ostéomatiques et convulsifs). *Gynec. et obst.* 23: 227-1, 22.

The authors report studies of the metabolism of calcium in thirty-five pregnant women. The determinations were made in the second half of pregnancy immediately preceding and during labor and during the puerperium.

In the cases of normal women they found that, except for the basic hypocalcemia inherent in the pregnancy itself, there are no important variations in the blood calcium in the three periods in which the determinations were made. In the cases of women with albuminuria or twin pregnancy with an excess of fluid the basic hypocalcemia is more marked and just before labor shows an abrupt increase to what may be called a "critical hypocalcemia." This crisis is followed by a quick return to normal after delivery. PACE.

pregnancy is becoming more generally recognized. Intestinal stasis treated by the indiscriminate use of drastic cathartics is undoubtedly a factor favoring its invasion of the blood stream and lymphatics through damaged portions of the intestinal mucosa. Biliary and hepatic infections may result directly from blood-stream infections or from upward extension to the biliary tract and liver, especially as the result of vomiting of pregnancy. Urinary infections may be caused to some extent by ureteral compression with subsequent infection of the stagnant urine distending the renal pelvis. Congenital malformations (strictures) may also play a part.

Colon bacillus pyelonephritis is most common during the last three months of pregnancy. Infections during the puerperium may result from urinary infection ascending from the bladder or from the recrudescence of an unrecognized or only partially quiescent process which existed during the pregnancy. The symptoms vary in intensity, ranging from mild intermittent types to those which are acute and fulminating. Like Bar, the author distinguishes a pre-suppurative and a suppurative period. The pre-suppurative period is characterized by headache, chills, fever, a rapid pulse, coating of the tongue, anorexia, vomiting, costovertebral tenderness or pain in the lumbar region corresponding to the course of the ureters, a decrease in the urinary output, and the presence of slight traces of albumin, leucocytes, and colon bacilli in the urine. It lasts five or six days. In the suppurative period which follows, the general symptoms disappear, the urinary output increases, and a large amount of pus is found in the centrifugized specimen. This is the stage of remission which may last until the pregnancy is terminated or may be followed by repeated exacerbations. Occasionally the patient's condition becomes so desperate that labor must be induced prematurely. After delivery the symptoms disappear quite promptly. Abortion is rare in pyelonephritis although premature labor is not uncommon.

The diagnosis of colon bacillus infection is possible only by careful examination of the urine.

The prognosis for the mother is almost always favorable, but recurrences during subsequent pregnancies are not infrequent. The prognosis for the fetus is less favorable. As a rule the infant is poorly nourished and often it is born prematurely and is reared with difficulty.

Hepatic and biliary infections due to the colon bacillus are rare. They do not differ symptomatically or objectively from other types of hepatic and biliary infection. Mild icterus is often a transient phenomenon. The course is generally benign.

HAROLD C. MACK, M.D.

Questionnaire on Tuberculosis and Pregnancy
(Umfrage ueber Tuberkulose und Schwangerschaft)
Med. Klin., 1931, 1, 723, 761, 798, 838, 878, II, 988, 1138, 1342

The reasons for the differences of opinion regarding the necessity for, or the uselessness of interrup-

tion of pregnancy in pulmonary tuberculosis lie in the peculiarities of the course of pregnancy on the one hand and the particularly fateful course of tuberculosis which is so difficult to prognosticate. The toxic general symptoms, which are to be considered due to the entrance of foreign protein into the organism and destruction of autogenous tissue protein, cease by the end of the fourth month, when the favorable effect of the pregnancy upon the maternal organism begins. This stage of accommodation is followed by the stage of functional demands. The most serious crisis is reached with the beginning of labor. During the puerperium the healing of the large wounds in the mucous membrane and the involutional processes in the genitalia and entire body, with frequent loss of weight, determine the picture. In the tuberculous woman the most marked subjective effect upon the general health occurs at the beginning of pregnancy. The mortality also is greatest in primiparae. The second half of pregnancy and labor are less dangerous than the puerperium with its involutional processes.

Experience shows that interruption of pregnancy is well borne by the tuberculous woman in the first three months, but a good result is not to be expected from it after the fourth month.

Because of the uncertainty of the prognosis in pulmonary tuberculosis, the opinion of a lung specialist regarding the duration, severity, and activity of the condition is essential. It is of social-hygienic importance that timely interruption of pregnancy may save a mother for her children. In the case of the primipara it is important to determine whether the child will be healthy and vigorous. However, the bearing of a child by a tuberculous woman requires long, perhaps constant, sanitarium treatment before labor, strict clinical observation during labor, and treatment for many months after delivery. The healthy child must be taken from the mother immediately to keep it from becoming infected. In the opinion of the majority, it should not be nursed by the mother. Interruption of pregnancy is never the complete remedy for the tuberculous woman, it must always be supplemented by sanitarium treatment. The indication for simultaneous sterilization requires a most careful consideration of the prognosis of the pulmonary process. Prevention of pregnancy in the tuberculous woman obviates a number of problems. Not strict rules, but a thorough study of the individual case by the tuberculous specialist, social hygienist, pediatrician, and obstetrician must determine the medical care of the patient.

In reply to a questionnaire, HENKEL, by means of historical references, calls attention to the frequently contradictory views regarding the problem of tuberculosis and pregnancy. He states that pregnancy is by no means constant in its course and effects. In some cases it may be a complete somatic and psychic development, but in others, a somatic disease leading to catastrophe. The classification of tuberculosis into latent inactive and manifestly active forms does not definitely answer the question of the advisability

epileptics. The terminal cerebral symptoms throughout this entire group are similar and the method of treatment indicated to control these symptoms is applicable to eclampsia.

In eclampsia, a vasospastic hypertension is present and there is frequently a renal decompensation associated with fluid retention. In the past, the continued administration of fluid without proper consideration of its elimination was a common method of practice in spite of the evident water imbalance. When the skin and bowels are able to compensate for the renal deficiency in fluid elimination a proper balance of fluids is maintained.

Diet becomes of equal importance in the management of water balance in conditions in which hydration states tend to occur. Foods with a high water content and concentrated carbohydrates (ice cream, candy syrups, sweet desserts) must be avoided to prevent water storage during re-establishment of the body water balance.

Morphine being a respiratory depressant, is dangerous if intracranial pressure already exists. It should not be employed unless it is absolutely necessary.

Women with eclampsia may be divided into three groups: (1) the moderately pre-eclamptic, (2) those with dangerously threatening pre-eclampsia, (a) without chronic nephritis, and (b) with chronic nephritis, and (3) the actively eclamptic.

Cases of moderate pre-eclampsia are characterized by definite signs of hypertension, albuminuria, edema of the extremities, headache, and beginning visual disturbances. The treatment used by the authors in such cases is as follows:

1. The total output of urine for twenty-four hours is measured and charted. During this twenty-four hours the intake of fluid is reduced to the minimum or fluid is withheld entirely.

2. The total fluid intake is regulated so that it does not exceed the urine output for the first twenty-four hours.

3. As far as practical, the level of the fluid intake is maintained so as to equal or balance with the output of the previous day. An accurate chart record is made of the intake and output of fluid, and the patient is weighed daily.

4. Moderate dehydration is induced with small daily doses of a saturated solution of magnesium sulphate.

5. A diet of solid foods of wide variety, including proteins, and with a low salt content is given. The patient is fed well but moderately. Liquid nourishment with a high water content is avoided.

6. Food and drink are given at three-hour intervals throughout the day. Between these small meals no eating or drinking is permitted.

Cases of dangerously threatening pre-eclampsia are characterized by marked hypertension, albumin and casts in the urine, external edema, aggravated headache, vomiting, and visual disturbances or other cerebral symptoms. It is difficult and often impossible to classify them accurately according to the

presence or absence of pre-existing nephritis. The treatment given by the authors in the two sub-groups is essentially the same, but the patients with nephritis require more careful control of fluids and diet. The authors' treatment is as follows:

1. All fluids (and usually all food) are withheld until the twenty-four-hour output of urine is known. Then an intake of fluid at, or slightly below the daily output is maintained.

2. The process of dehydration is begun at once by giving intravenously 50 c.c. of a 50 per cent solution of glucose. If necessary this dose is repeated after from four to six hours.

3. One or more doses of a saturated solution of magnesium sulphate are given by mouth until 5-10 stools are passed. This is repeated as indicated.

4. If no marked improvement is noted after from fifteen to thirty hours, one or more spinal drainages are done at intervals of from four to six hours. When spinal puncture is impractical, venesection is done.

5. A strict balance of fluid and "dry" solid diet is maintained.

Cases of active eclampsia are characterized by convulsions. The treatment given by the authors in such cases is as follows:

1. A hypodermic injection of 2 or 3 gr. of sodium luminal is given immediately and repeated after two hours if necessary. Morphine is used only if absolutely necessary and only after the administration of glucose and after spinal drainage.

2. Fifty cubic centimeters of a 50 per cent solution of glucose are given intravenously at the earliest opportunity.

3. The spinal fluid is drained as completely as possible (from 45 to 100 c.c.) preferably with the head raised to an angle of 30 degrees. When spinal drainage is impracticable, venesection until the systolic pressure drops from thirty to fifty points is substituted. Drainage is repeated after from four to six hours if marked improvement is not noted.

4. Magnesium sulphate is given by mouth or bowel.

5. Absolutely no fluids except magnesium sulphate solution are given for at least twenty-four hours. The temperature, pulse, respiration, and pulse pressure are recorded every hour.

If dehydration has been effective, the uterus need not be emptied and labor need not be induced nor hurried, except for reasons other than the attack for which the patient is being treated.

The authors cite several cases in which the treatments described yielded gratifying results.

ROWLAND M. EASTMAN, M.D.

Andreades, J. Colon Bacillus Infectiones During Pregnancy (Les infections de la grossesse). *Rev. franç. de gynéc. et d'obst.* 91, 221, 1947.

While normally not a pathogenic organism, the colon bacillus possesses unusual vitality and may become virulent when resistance to it is diminished or the tissues are damaged. Its role in intestinal, biliary and especially urinary infections during

RITSCHER states that although sanatoria have today been opened to a greater extent to tuberculous pregnant women, the number of pregnant women among sanatorium patients is very low. In the year 1930 there were only 8 pregnant women among 1,088 admissions, and in 10 women pregnancy had been interrupted previously. It is very difficult to subject the patients to the protracted treatment. To the lung specialist the character of the tuberculous process is of decisive importance in determining the necessity of interrupting the pregnancy. In apical processes with small foci, the interruption of pregnancy should be refused if there is no bacillary expectoration or definite hæmoptysis. In other types of tuberculosis already existing before the onset of pregnancy, general rules of procedure cannot be established. In simple cirrhosis without signs of activity for two years, the interruption of pregnancy can be denied if the patient is kept under careful observation. In the presence of fresh infiltration and infiltrative recurrence in old fields of induration, interruption of the pregnancy should undoubtedly be carried out in the first few months. In the most severe forms of the disease and after the fourth month interruption is usually useless.

GRAGERT believes that there are reciprocal relations between the gravid organism and tuberculous disease. Aggravation of the tuberculosis does not necessarily occur as the result of pregnancy, labor, and puerperium. Improvement and cure of the tuberculosis with continuation of the pregnancy is possible with suitable treatment in a large number of cases, even those of pulmonary tuberculosis. A prerequisite for this result is the establishment by sanatoria of departments for pregnant women, which departments should be under the joint direction of an internist and an obstetrician. It should be the duty of the obstetrician to reduce to the minimum the load imposed on the body by the pregnancy by regulating the diet and possibly by medical measures, to conduct the labor as carefully as possible, and to hasten the processes of involution in the puerperium by drugs and complete isolation of the child from its mother. In some cases, especially those of pulmonary tuberculosis, the interruption of pregnancy is unavoidable.

HEGLER reports that in a case of severe pulmonary tuberculosis on the left side with positive bacillary findings, an artificial pneumothorax was induced in the sixth month of pregnancy. A healthy child was born and the tuberculosis of the mother slowly became cured.

BOENNIGER reports the case of an eighteen-year-old patient with severe, open, cavernous pulmonary tuberculosis who, under good nursing care and pneumothorax therapy, withstood pregnancy well although her social conditions were poor. It appeared that a favorable change occurred in the organism as the result of the pregnancy. A prolonged period of observation, not necessarily in a clinic, is of decisive importance whenever the question of interrupting a pregnancy presents itself.

COBET, FRISCHBIER, and KREMER state that in active pulmonary tuberculosis labor is the chief source of danger, and that in certain forms of the disease it is necessary, as a matter of principle to interrupt the pregnancy by the third, or at the latest, by the fourth month. The interruption of pregnancy is indicated in active, open, progressing pulmonary tuberculosis and severe toxic, exudative, or extensive cavernous phthisis, undoubtedly also in early infiltration because of its tendency to break down and disseminate subsequently. In definitely inactive tuberculosis (apical tuberculosis) interruption should be denied. In stationary, benign chronic, fibrous phthisis, a decision can be reached only by prolonged observation and from a report of a welfare station, in such doubtful cases the psychic condition of the patient should also be considered. Sterilization should be considered only when improvement is not to be expected or the woman greatly desires it. For interruption of a pregnancy that is too far advanced, conservative or collapse therapy in a sanatorium should be considered. Special obstetrical departments in sanatoria with the co-operation of lung specialists and gynecologists are urgently required.

STELAKOSCH (G)

LABOR AND ITS COMPLICATIONS

Reis, R. A., Baer, J. L., Arens, R. A., and Stewart, E. Traumatic Separation of the Symphysis Pubis During Spontaneous Labor, with a Clinical and X-Ray Study of the Normal Symphysis Pubis During Pregnancy and the Puerperium. *Surg., Gynec. & Obst.*, 1932, 14, 336.

Of 25,000 women delivered at the Michael Reese Hospital, Chicago, in the period from 1912 to 1931, rupture of the symphysis pubis during spontaneous labor occurred in only 5. This agrees with the rarity of the complication reported in the literature. In an X-ray study of the symphysis pubis in 54 women during pregnancy, labor, and the puerperium Brehm and Weirauch found no separation at all in only 47 per cent. In 27 per cent they found a separation of from 0.5 to 0.9 cm., and in 26 per cent a separation of more than 0.9 cm. with symptoms. The authors believe that their conclusions are erroneous because X-ray findings are of little diagnostic value unless the rupture produces a gross separation.

After briefly reviewing the anatomy of the symphysis pubis the authors discuss the changes occurring in the symphysis pubis in pregnancy. The changes in the ligaments of the symphysis pubis have been attributed to the increased blood and lymph supply occurring in the pelvic region during pregnancy. The authors have subjected the physiological changes in the ligamentous structures of the pelvis and the hypermotility of the symphysis pubis to a careful roentgenological and clinical investigation and have made a comparative roentgenological study of the female and male pelvis.

According to Keller, rupture of the symphysis pubis in spontaneous labor is due to the marked

of interrupting an associated pregnancy. The fact that pregnancy does not always run the same course explains why in some cases tuberculosis is influenced by it considerably and in others not at all. When pregnancy and tuberculosis are associated the pathological condition should be treated and there should be no interference with the physiological process. The experienced internist must determine the form and extent of the tuberculosis in the given case. It is the duty of the obstetrician to determine the effect of the pregnancy upon the organism as a whole and recognize the indications for interruption of the pregnancy.

VON FRANQUÉ agrees with the conclusions of Runge and believes that the interruption of pregnancy in women with tuberculosis cannot yet be abandoned as in the present economic depression proper sanatorium care is often impossible. At the Bonn Clinic, the interruption of pregnancy is carried out only in active tuberculosis after consultation with the Medical Clinic, the Polyclinic, or a tuberculosis sanatorium of recognized standing. It is done essentially according to the well-known principles of Winter and only within the first three or at most, four months of pregnancy.

BLATTIS claims that pregnancy has by no means the unfavorable influence upon tuberculosis that is generally assumed. Not only external therapeutic remedies, but also the desire of the pregnant woman to keep the child are of importance. The therapeutic indications must be determined only by clinical observation. Before interruption of pregnancy is attempted, it is necessary to build up the resistance to the tuberculosis as much as possible. The total extirpation of the uterus and ovaries from below gives satisfactory results.

BLAYER calls attention to the extraordinary difficulties in the diagnosis and prognosis of pulmonary tuberculosis, which even roentgen-ray examination does not overcome. Occasionally according to the constitution, there seem to be benign and malignant forms of tuberculosis, which run a characteristic course. Furthermore, not a little depends upon the desire to have a child. The pregnancy should not be interrupted when the tuberculosis is incurable or the pregnancy has advanced too far. The primary operative mortality of the interruption of pregnancy is not to be underestimated. The mortality of 1.5 per cent is due largely to postoperative pulmonary embolism. As temporary roentgen sterilization is not as yet sufficiently reliable, the procedure of Medlener is used for operative sterilization. When the interruption of pregnancy is refused the problem of the physician is not solved, but is just begun. For the conduct of labor in tuberculosis, the ability to withstand labor pains, loss of blood, and anesthetics are of special importance. According to Blayer's experience the supposed harmful effects of the puerperium after a well-borne pregnancy have not been proved.

NOVAK states that every active tuberculous process is aggravated by pregnancy. This is true espe-

cially in the first or toxic stage of pregnancy and in the puerperium. After the fourth month, interruption of the pregnancy is no longer permissible as it gives no benefit that would justify the sacrifice of the life of the child. Sterilization is indicated only when it is desired by both the husband and wife and the woman has at least two healthy, living children and has become pregnant in spite of proper contraceptive measures. In the establishment of the indications for the interruption of pregnancy in tuberculosis, the woman's social and economic conditions must be given consideration; a eugenic indication does not enter into the question.

PANOW reviews in detail the fundamental rules of Thannhauser and Starlinger for the interruption of pregnancy in pulmonary tuberculosis, which were formulated at his request, and from which his views deviate to the extent that he would interrupt the pregnancy even after the third month. The unfavorable effect of the processes of pregnancy and particularly of the puerperium upon pulmonary tuberculosis has been proved, and a fundamental rejection of interruption of pregnancy is not to be considered. The interruption of pregnancy must be limited to the cases in which it is evident that nothing can be accomplished with the usual methods of treatment even with inclusion of sanatorium treatment. From roentgen treatment no beneficial effect, but rather an aggravation of the condition, can be expected.

GRANOW says that the interruption of pregnancy in the presence of complicating tuberculosis is in part a social problem. The refusal of interruption on principle or otherwise is an experiment on seriously endangered individuals. The basic question is: In which cases must interruption of pregnancy be practiced? Only in the first three months is it of value. Therefore early diagnosis is necessary (Auchincloss-Zondek). The so-called "menstrual reaction" of tuberculous women is also of importance. There is a lack of sufficient data on the subsequent fate of the women in whom pregnancy was interrupted because of tuberculosis. Surgeons should be less reserved with the permanent sterilization of tuberculous women. The genesis of the activation of tuberculous processes by pregnancy is doubtful in many respects. Closely related to the phasic course of female sexual function there are non-specific fluctuations of resistance, the relation of which to conditions of allergy against tuberculosis is not well understood.

SILVERSTEIN states that the obstetrician is concerned only with the technique of the interruption of pregnancy and it is for the internist to decide whether the pregnancy should be interrupted. In the frequent doubtful cases the pregnant woman should be given the right to decide. If the disease is incurable or if a recurrence is probable, sterilization should be done when the pregnancy is interrupted as contraceptive measures have proved unreliable. In all cases interruption of pregnancy is a serious operation and should be kept properly within clinical bounds.

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STRAKOSCH (G)

LABOR AND ITS COMPLICATIONS

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VOX FRANK agrees with the conclusions of Runge and believes that the interruption of pregnancy in women with tuberculosis cannot yet be abandoned as in the present economic depression proper sanatorium care is often impossible. At the Bonn Clinic, the interruption of pregnancy is carried out only in active tuberculosis after consultation with the Medical Clinic, the Polyclinic, or a tuberculosis sanatorium of recognized standing. It is done essentially according to the well-known principles of Winter and only within the first three or at most, four months of pregnancy.

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MAYER calls attention to the extraordinary difficulties in the diagnosis and prognosis of pulmonary tuberculosis, which even roentgen-ray examination does not overcome. Occasionally according to the constitution, there seem to be benign and malignant forms of tuberculosis, which run a characteristic course. Furthermore, not a little depends upon the desire to have a child. The pregnancy should not be interrupted when the tuberculosis is incurable or the pregnancy has advanced too far. The primary operative mortality of the interruption of pregnancy is not to be underestimated. The mortality of per cent is due largely to postoperative pulmonary embolism. As temporary roentgen sterilization is not as yet sufficiently reliable, the procedure of Madlener is used for operative sterilization. When the interruption of pregnancy is refused the problem of the physician is not solved, but is just begun. For the conduct of labor in tuberculosis, the ability to withstand labor pains, loss of blood, and anesthesia are of special importance. According to Mayer's experience the supposed harmful effects of the puerperium after a well-borne pregnancy have not been proved.

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SKILSKIEW states that the obstetrician is concerned only with the technique of the interruption of pregnancy and it is for the internist to decide whether the pregnancy should be interrupted. In the frequent doubtful cases the pregnant woman should be given the right to decide. If the disease is incurable or if a recurrence is probable, sterilization should be done when the pregnancy is interrupted as contraceptive measures have proved unreliable. In all cases interruption of pregnancy is a serious operation and should be kept properly within clinical bounds.

In addition to the lymphogenic and the secondary hæmatogenic dissemination, there is a primary hæmatogenic spread due to the breaking down of endophlebitic thrombi. This primary hæmatogenic invasion of the blood stream by bacteria may lead to the formation of abscesses in the walls of veins at a distance from the focus of infection. Like endocarditis, these abscesses are always secondary manifestations.

From these theoretical considerations it follows that sepsis and pyæmia cannot be separated clinically as they are manifestations of the same process. Pyæmia develops in puerperal general infection when the resistance of the body is better or the pathogenicity of the bacteria is less. Thrombi are formed to wall off an endophlebitic focus, but later break down and produce metastatic foci. Accordingly, the entire process is a septic general infection. It should not be designated according to the individual clinical symptoms such as chills, peritonitis, endocarditis, or thrombophlebitis, but should be called sepsis with peritonitis, endocarditis, or thrombophlebitis, and the word "pyæmia" should be discarded as it leads to a false conception of the primary process.

Sommer is convinced that medicinal treatment of this condition will develop in the future. Alcohol, antitoxin, and the administration of calose by drop infusion, often for as long as a week continuously, have proved of value. Blood transfusion is

beneficial especially in the presence of anæmia developing during the course of a chronic process. The medicament particularly recommended is euthagen, a silver-sulphur-sugar preparation. Early incisions into the parametrium should be made for drainage, even before pus has formed. Extirpation of the uterus is not recommended except in cases of sepsis due to gas gangrene. Sommer emphasizes that early ligation of veins will not influence the primary focus, but may be indicated later in the course of the disease when phlebotic metastases begin to appear. Contrary to the statements of Martens, Sommer maintains that pyæmia cannot be recognized early. He says that if venous ligation were done within the first few days in all cases with initial chills, as Martens recommends, operations would be performed in cases in which pyæmia would not have developed under any circumstances. It is only later in the less stormy cases, when the active lymphogenic bacterial invasion has regressed and further invasion is occurring passively because of the breaking-down of infected thrombi, that the indication for venous ligation may appear. Sommer prefers the extraperitoneal technique for the operation, but does not entirely reject the intraperitoneal route. In the future he will operate early only in cases of septic general infection exhibiting the clinical picture of pyæmia, the most important criterion of which is the demonstration of bacteria in the blood.

BRUEHL (G)

intensity of the uterine contractions plus marked rapidity of labor. This explanation is completely corroborated by the authors' findings.

The force necessary to tear the pubic ligaments and permit rupture of the fibrocartilaginous symphysis pubis has been determined experimentally. In studies made in 1864 on 7 female pelvises, Poulet found that between 170 and 300 kgrs. of direct pull were necessary to rupture the symphysis pubis. This finding has been corroborated.

The injury is primarily a rupture of the pubic ligaments followed by tearing of the fibrocartilaginous union at the symphysis. There is rarely a complete separation of the joint nearly always a bridge of fibrocartilage remains.

Hæmorrhage into the involved area is usual and results in the oedema. At autopsy on 5 primipars who died within twenty-four hours after delivery Loeschle found hæmorrhage into the symphysis pubis with tearing of the ligaments but no separation in 3. The cavities produced by the tearing of the ligaments were filled by a serousanguineous fluid.

The authors present a chronological summary of 61 cases reported in the literature and 5 others. After an extensive critical review of the literature and their own material they agree with Keller that separation of the symphysis pubis in spontaneous labor may be regarded most logically as the result of marked intensity of the uterine contractions plus marked rapidity of labor. The force that causes the separation is a wedge effect produced by the violent thrust of the fetal head through the superior strait. Sacro-falac involvement occurs when the separation is extensive and involves tearing of the ligaments on the anterior surface of the symchondroses with early tenderness as a possible joint symptom.

The typical physical findings consist of oedema and swelling tenderness, pain on pressure and a characteristic waddling gait. Of the 67 women whose cases are reviewed, 30 per cent had a contracted pelvis and 67 per cent overweight babies.

As a rule the symptoms of separation of the symphysis pubis develop during labor or within the first twenty-four hours after delivery. Usually the first and chief symptom is pain in the joint.

The authors found that the semi-sitting posture is best for roentgen study of the symphysis pubis in the 3 projections. In 80 women subjected to repeat roentgen examinations at short intervals throughout the course of their pregnancy and puerperium no characteristic changes in the symphysis pubis due to pregnancy were noted.

The complications of separation of the symphysis pubis include infection with or without abscess formation, sepsis, hæmorrhage, and non-union. The mortality in the collected series of cases was 0 per cent. Recovery was complete within 2 to 6 months in over 60 per cent. The authors have found that when separation of the symphysis pubis is followed by complete recovery it has no effect on subsequent labors and the joint is not affected by subsequent labors.

The proper treatment consists of absolute rest in bed with immobilization of the entire pelvic girdle. Immobilization may be obtained by means of sand-bags or adhesive tape strapping. The authors recommend circular compression by weights and pulleys as the most logical form of fixation. Occasionally open reduction and fixation are necessary.

LEOPOLD GOLDBETER, M.D.

PUERPERIUM AND ITS COMPLICATIONS

Sommer K.: The Nature, Roots of Dissemination, and Treatment of Puerperal Septic General Infection. (Weissen und Ausbreitungsweg der puerperalen septischen Allgemeinfektion und ihre Therapie.) *Zeitschr. f. Geburtsh. u. Gynæk.* 1932, 645.

In this article the author attempts to explain his conception of the nature of puerperal sepsis. His theory is based on a total of 400 cases of severe puerperal general infection, but especially on 43 cases of puerperal fever observed during 1930 in the Virchow Hospital in Berlin.

After feverless spontaneous delivery bacteria are found in the uterine cavity regularly within forty-eight hours. Local disease, puerperal endometritis, occurs only when the bodily resistance is lowered or the organisms are of more than usual pathogenicity. Even then there is no flooding of the body with bacteria, but merely an invasion of the blood stream by toxins. This invasion is frequently accompanied by a chill. The chill is the reaction of the body to an inundation by toxins which is due to the absorption of toxins from the uterus or the liberation of toxins by the destruction of bacteria in the blood. The interval between bacterial invasion and the toxic chill is about two hours.

In some cases the endometritis may be the source of a general infection. When the condition runs a febrile course no reactions of resistance are encountered; the patient is overcome rapidly. In other cases there is time for the development of phlebitis of the small veins of the uterus without however a sufficient interval for the development of a protective thrombus. In cases with better resistance, thrombosis will develop in the small veins and keep the process localized for a time. To lymphangitis the body is able to offer little resistance. The lymphogenic advance of the bacteria follows the course of the vessels, causes an interstitial phlegmon of the parametrium or breaks through and produces peritonitis. The perivascular or the interstitial phlegmonous processes lead secondarily to local disease of the vessels, especially of the veins, and infection of the venous walls is followed by thrombosis as a defense reaction. Under these conditions the thrombosis is to be regarded, not as an etiological factor in the disease, but as a curative process. In some cases the metastatic focus breaks down, forming secondary septic foci from which bacteria enter the blood stream. These secondary foci may be of extreme importance in the further course of the disease.

tice Weakness of the shadows may be caused by faulty technique or polyuria

The form of the image is modified by pyelo-ureteral peristalsis. It therefore depends upon the moment at which the roentgenogram is made. When stasis is present the shadow may be intense even when renal function is markedly impaired.

Because of these facts it is evident that conclusions drawn from the appearance of the image alone are not altogether reliable.

Normally, the ureter is seldom visible throughout its length. When it is completely visible, atony is present, but this is not necessarily pathological. Occasionally no image is obtained, even in the absence of disease. This may be explained in some cases by hypermobility of the pelvis and ureter. As a rule, however, it indicates non-function or congenital absence of the kidney.

In comparing intravenous urography with ureteral catheterization the author says that the latter gives more satisfactory images and in spite of some disadvantages is in general superior to the former. However, intravenous urography has a special field of usefulness when for some reason ureteral catheterization is impracticable. It is indispensable in cases of tight ureteral stricture, excessive enlargement of the prostate, intense cystitis, abundant hæmatoma, an invisible ureteral orifice, certain crateriform ureteral orifices, and stenoses, spasms, kinks, and calculi. It is especially suited to the examination of infants.

Certain indications depend upon the disease present, but the method must be employed in conjunction with microscopic and chemical examination of the urine and the phenolsulphonphthalein test.

In renal tuberculosis, ureteral catheterization is of most advantage. Theoretically it is associated with the danger of inoculating the healthy kidney, but practically this danger is non-existent. When this procedure is not feasible, the intravenous method may be used provided the diagnosis has been established bacteriologically and renal function is adequate. The information obtained is usually very exact. However, the pelvis of the supposedly healthy kidney must always be visualized perfectly. In very early cases the method is of no value. When the tuberculosis is bilateral the dangers are very great.

Because of the associated stasis, hydronephrosis gives very excellent images. This is true even in advanced cases in which the renal parenchyma is reduced to a thin shell. Likewise in cases with symptoms of chronic pyelonephritis, cases of malformation of the urinary tract, and cases of pyelitis of pregnancy, intravenous urography is the method of choice. It is valuable also in cases of transparent calculi, and for the identification of extrarenal shadows.

ALBERT F. DE GROOT, M.D.

Masnata, G. Traumatic Renal Lithiasis (Litiasis renale traumatica). *Clin. chir.*, 1932, viii, 651.

The author reports four cases of traumatic renal lithiasis which he believes is not a very rare condi-

tion. Three of his patients were males who had been traumatized from three to twenty-five years previously. In all four, the right kidney was involved. In three cases the injury had been followed by definite hæmaturia. Masnata believes that hæmaturia occurred also in the other case, but was probably too slight to be noticed. Two of the patients were confined to bed for a rather long time after the injury. According to Chauffard, recumbency favors the formation of renal stones. Two of the author's patients were treated by nephrotomy and two by nephrectomy. All of them were cured.

Masnata believes that traumatic renal lithiasis may be of great medicolegal importance, but states that it may be very difficult to prove the relationship of renal stones to an injury.

EUGENE T. LEDDY, M.D.

Colston, J. A. C. Calcified Cysts of the Kidney. *Bull. Johns Hopkins Hosp.*, Balt., 1932, li, 125.

The author reports six cases of calcified cysts of the kidney.

Calcified cysts arise from one of two causes: (1) hæmorrhage into a simple serous cyst, or (2) a perirenal hæmatoma. In the last of the six cases reported the direct etiological factor was certainly trauma.

On microscopic study, the cyst wall is seen to consist of fibrous and scar tissue with irregular areas of calcification and no evidence of a lining.

The symptoms are those resulting from the pressure and weight of the cyst. The mass can usually be palpated, at times by the patient himself, and a good flat roentgenogram will show its outline.

The treatment of choice seems to be marsupialization with excision of as much of the cyst wall as is feasible. Prevention of the development of such cysts depends upon the removal of simple cysts before the occurrence of intracystic hæmorrhage and the correct treatment of the traumatized kidney.

ANDREW McNALLY, M.D.

Stone, E. Heminephrectomy. *J. Urol.*, 1932, xxviii, 301.

Stone discusses the indications, technique, and end-results of heminephrectomy. He states that heminephrectomy is indicated in double kidney when the disease is limited to one section and a sufficient secretory area is present in the other segment. The degree of demarcation between the two halves, their blood supply, and the condition of the pelves and ureters should be considered. In the cases treated by heminephrectomy which are reviewed by the author the mortality and morbidity were low.

GILBERT J. THOMAS, M.D.

De la Pena, A., and De la Pena, E. Artificial Occlusion of the Ureter Previous to Nephrectomy in Early Renal Tuberculosis. The Preliminary Report of an Experimental and Clinical Study. *J. Urol.*, 1932, xxviii, 343.

The authors recommend artificial occlusion of the ureter leading from a kidney which is infected with

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

Jehliel, B.: An Experimental, Roentgenological, and Clinical Study of Intravenous Urography (Contribution à l'étude expérimentale, radiologique et clinique de l'urographie intraveineuse. Étude critique) *J. d'urét. méd. et chir.* 1932 XVIII, 419, 5 p. xviii pp.

Intravenous urography introduced two years ago, was immediately received favorably almost everywhere. However, the initial enthusiasm regarding it soon gave place to scepticism and some urologists now consider the method without value. In this article Jehliel attempts to determine the true status of the procedure and to establish precise indications for its use. His conclusions are based on the literature and his own experience. The opaque medium discussed is uroselectan.

Uroselectan is eliminated unaltered in the urine, but is capable of provoking certain changes in the blood, such as a decrease in the chlorides and an increase in the urea and cholesterolin which explain occasional intolerance to it.

Attempts have been made to determine the function of the kidneys by studying the elimination of uroselectan. Experiments show that the rate of excretion becomes stable only after a period of from four to ten hours, a practical disadvantage. Moreover although in general the results parallel those of the phenolsulphthalein test and Ambard's constant, they are much less constant and precise. The quantity of uroselectan excreted is best determined by analyzing for iodine. The procedure is somewhat too complicated for an ordinary clinical laboratory. Ninety per cent of the drug should be eliminated in ten hours.

An approximate idea of the elimination can be obtained by determining the specific gravity of the urine. When the kidney is normal, the specific gravity reaches from 1.050 to 1.060 by the fourth hour and then quickly falls to 1.030, where it remains for from twenty-four to thirty-six hours. This method cannot be very exact because of the variation of the other urinary substances, notably urea. Uroselectan lowers the output of phenolsulphthalein, the phenolsulphthalein test, when necessary should always precede urography with uroselectan.

Certain precautions must be observed in the urographic examination. The solution must be fresh and made up in double distilled water. A frequent cause of failure is gas in the intestine. Of the various methods of preparing the patient, the most simple ones are the most effective. A purge should be given the preceding night and an enema in the morning. The standard dose of uroselectan at present is 30 gm., but there is a tendency to reduce it to 20 or even 15 gm. The roentgenograms are usually taken

five, forty-five and seventy-five minutes after the intravenous injection. However when the elimination is poor it is best to delay the last roentgenogram until the second or third hour. Wigert places a catheter in the bladder and makes the roentgenogram when the specific gravity of the urine reaches its maximum.

The time of appearance of the shadow gives some idea of the state of renal function.

The factors especially influencing the quality of the roentgenogram are intestinal gas, the concentration of uroselectan in the urine, and the pre-ureteral peristalsis. Elimination of the gas is favored by the preliminary purgative and enema. Multitrin and opium are of little value. An abdominal band has been of some service. Some workers take a preliminary roentgenogram and if gas is present pass a high rectal tube. Concentration of the drug in the urine is increased by limiting the fluid intake a few hours before and during the examination. The greater the stasis in the urinary tract the more readily the urifers are visualized. Stasis may be favored by the Trendelenburg position or a marked lordosis. Distention of the bladder is of value only if it is pushed to extreme limits.

The dangers of intravenous urography have been both exaggerated and minimized. Thrombosis and abscess are caused by faulty technique and are easily avoided. Some of the fatalities have been due to one of the methods is the presence of definite contraindications.

Among possible complications which are usually benign are pain along the vein during the injection, sweating, headache, and slight chills. More grave, but less common complications are delayed reactions, which include profound prostration, pallor, vomiting, and fever. Syncope, shock, cutaneous eruptions, and tetany have been reported, but in most of the cases occurred at the time a new large dose of uroselectan was used and the product was less satisfactory than it is today.

Graves' disease and an idiosyncrasy to iodine are theoretical but not practical contraindications to the method. Absolute contraindications are glomerulonephritis, severe cardiac disease, and hypertension. In any doubtful case it is best to make a phenolsulphthalein test.

The information afforded by intravenous urography includes the conformation of the urinary tract, the motility of the renal pelvis and the ureter and the excretory capacity of the kidney.

The images obtained have certain characteristics. As the shadows are less dense than those obtained by ureteral catheterization, fluoroscopic examination is of little value and the reading of the roentgenograms requires much special experience and prac-

tice Weakness of the shadows may be caused by faulty technique or polyuria

The form of the image is modified by pyelo-ureteral peristalsis. It therefore depends upon the moment at which the roentgenogram is made. When stasis is present the shadow may be intense even when renal function is markedly impaired.

Because of these facts it is evident that conclusions drawn from the appearance of the image alone are not altogether reliable.

Normally, the ureter is seldom visible throughout its length. When it is completely visible, atony is present, but this is not necessarily pathological. Occasionally no image is obtained, even in the absence of disease. This may be explained in some cases by hypermotility of the pelvis and ureter. As a rule, however, it indicates non-function or congenital absence of the kidney.

In comparing intravenous urography with ureteral catheterization the author says that the latter gives more satisfactory images and in spite of some disadvantages is in general superior to the former. However, intravenous urography has a special field of usefulness when for some reason ureteral catheterization is impracticable. It is indispensable in cases of tight ureteral stricture, excessive enlargement of the prostate, intense cystitis, abundant hæmaturia, an invisible ureteral orifice, certain crateriform ureteral orifices, and stenoses, spasms, kinks, and calculi. It is especially suited to the examination of infants.

Certain indications depend upon the disease present, but the method must be employed in conjunction with microscopic and chemical examination of the urine and the phenolsulphonphthalein test.

In renal tuberculosis, ureteral catheterization is of most advantage. Theoretically it is associated with the danger of inoculating the healthy kidney, but practically this danger is non-existent. When this procedure is not feasible, the intravenous method may be used provided the diagnosis has been established bacteriologically and renal function is adequate. The information obtained is usually very exact. However, the pelvis of the supposedly healthy kidney must always be visualized perfectly. In very early cases the method is of no value. When the tuberculosis is bilateral the dangers are very great.

Because of the associated stasis, hydronephrosis gives very excellent images. This is true even in advanced cases in which the renal parenchyma is reduced to a thin shell. Likewise in cases with symptoms of chronic pyelonephritis, cases of malformation of the urinary tract, and cases of pyelitis of pregnancy, intravenous urography is the method of choice. It is valuable also in cases of transparent calculi, and for the identification of extrarenal shadows.

ALBERT F. DE GROAT, M.D.

Masnata, G. Traumatic Renal Lithiasis (Lithiasis renale traumatica). *Clin. chir.*, 1932, VIII, 651.

The author reports four cases of traumatic renal lithiasis which he believes is not a very rare condi-

tion. Three of his patients were males who had been traumatized from three to twenty-five years previously. In all four, the right kidney was involved. In three cases the injury had been followed by definite hæmaturia. Masnata believes that hæmaturia occurred also in the other case, but was probably too slight to be noticed. Two of the patients were confined to bed for a rather long time after the injury. According to Chauffard, recumbency favors the formation of renal stones. Two of the author's patients were treated by nephrotomy and two by nephrectomy. All of them were cured.

Masnata believes that traumatic renal lithiasis may be of great medicolegal importance, but states that it may be very difficult to prove the relationship of renal stones to an injury.

EUGENE T. LEDDY, M.D.

Colston, J. A. C. Calcified Cysts of the Kidney. *Bull. Johns Hopkins Hosp.*, Balt., 1932, LI, 125.

The author reports six cases of calcified cysts of the kidney.

Calcified cysts arise from one of two causes: (1) hæmorrhage into a simple serous cyst, or (2) a perirenal hæmatoma. In the last of the six cases reported the direct etiologic factor was certainly trauma.

On microscopic study the cyst wall is seen to consist of fibrous and scar tissue with irregular areas of calcification and no evidence of a lining.

The symptoms are those resulting from the pressure and weight of the cyst. The mass can usually be palpated, at times by the patient himself, and a good flat roentgenogram will show its outline.

The treatment of choice seems to be marsupialization with excision of as much of the cyst wall as is feasible. Prevention of the development of such cysts depends upon the removal of simple cysts before the occurrence of intracystic hæmorrhage and the correct treatment of the traumatized kidney.

ANDREW McNALLY, M.D.

Stone, E. Heminephrectomy. *J. Urol.*, 1932, XXVIII, 301.

Stone discusses the indications, technique, and end-results of heminephrectomy. He states that heminephrectomy is indicated in double kidney when the disease is limited to one section and a sufficient secretory area is present in the other segment. The degree of demarcation between the two halves, their blood supply, and the condition of the pelves and ureters should be considered. In the cases treated by heminephrectomy which are reviewed by the author the mortality and morbidity were low.

GILBERT J. THOMAS, M.D.

De la Pena, A., and De la Pena, E. Artificial Occlusion of the Ureter Previous to Nephrectomy in Early Renal Tuberculosis. The Preliminary Report of an Experimental and Clinical Study. *J. Urol.*, 1932, XXVIII, 343.

The authors recommend artificial occlusion of the ureter leading from a kidney which is infected with

acid-fast organisms. In cases of unilateral renal tuberculosis this procedure aids the development of compensatory hyperfunction of the healthy kidney decreases the danger of death from nephrectomy and apparently helps to prevent infection of the genital organs, and prevents infection of the other kidney in case of reflux from the bladder. It is suggested also as treatment for tuberculous cystitis in unilateral hydronephrosis and pyonephrosis. Difficulties may arise in case of sudden hydronephrosis and pyonephrosis, and peritonitis may develop if the technique is faulty. **GLAZIER J. THOMAS, M.D.**

BLADDER, URETHRA, AND PENIS

Leo, E.: A Contribution to Our Knowledge of Femoral Cystocoele (Contributo alla conoscenza del cistocoele femorale). *Arch. ital. di chir.* 93: 321, 1921.

Leo reports the case of a woman thirty years of age who developed an irreducible femoral hernia on the right side. Pressure upon the hernial sac in an attempt to reduce it by taxis caused a desire to urinate. At operation, an intraperitoneal type of urinary cystocoele was found incarcerated in the hernial sac. The bladder was reduced and the hernia repaired. Unsuccessful recovery resulted. The author was able to collect only nineteen similar cases from the literature.

In reviewing the clinical and anatomical characteristics and the various theories regarding the pathogenesis of vesical hernia Leo states that over distention of the bladder for a long time allows the formation of intraperitoneal, extraperitoneal, or paraperitoneal adhesions between a portion of the bladder wall and the hernial orifice. The resulting immobilization of the bladder wall leads to loss of the contractile function of that portion of the bladder and subsequently to hypotonicity and partial atrophy of the fixed musculature. The remaining bladder muscle becomes hypertrophic to compensate for the fixation of the bladder. Increased intra-vesical pressure gradually forces the adherent bladder wall into the hernial orifice and forms a diverticulum in the hernial sac.

The author cites the rare types of congenital vesical hernia.

PETER A. ROSE, M.D.

Makier N. Cystoscopic Appearances of Bilharzialia of the Bladder. *Brit. J. Urol.*, 1925, 1: 409.

The cystoscopic findings in bilharzialia of the bladder depend essentially on infiltration of the vesical tissues by bilharzial ova and the pathological processes resulting therefrom.

When the lesions occur on the mucous membrane or in the submucous layer of the bladder they can be easily detected with the cystoscope. As a rule their appearance is typical, but sometimes may closely resemble that of another disease such as tuberculosis or cancer of the bladder.

In some cases the bilharzial lesions may be limited to the deeper vesical structures, the cystoscopic ap-

pearance of the mucous membrane remaining normal. The mucous membrane may appear normal even when the deep lesions have advanced to a stage of calcification evident on X-ray examination. As a rule, however, such deep lesions affect the mucous membrane.

It is exceptional for the disease to be uniformly distributed throughout the bladder. In most cases it is limited to the trigone and the ureteral openings. From these areas it spreads first to the posterior wall and finally to the summit. In some cases the summit may be the only area presenting the typical appearance of the condition.

The lesions of the mucous membrane may appear in the form of hyperemia, tubercles, nodules, ulcers, or papillomata.

One of the results of infiltration of the submucous layer of the bladder by bilharzial ova is the formation under the mucous membrane of tumor-like masses of varying size. The mucous membrane stretched over these masses may be perfectly normal or covered with tubercles. The masses occur as a rule in the floor and the posterior wall of the bladder.

The effects of infiltration of the deep bladder tissues by bilharzial ova and the accompanying fibrosis and calcification can be studied by cystoscopy only to a very limited degree.

Bilharzialia predisposes to stone formation and accounts to a certain extent for the prevalence of vesical calculi in Egypt. When infection supervenes, elevation occurs and the ulcerated spots become caked with phosphates. Cystoscopy then reveals whitish blotches or plaques dispersed irregularly over a deep red surface.

In cases of infection, tall processes with fleshy margins and fleshy surfaces are situated on a ragged, cloudy mucous membrane. Here and there shaggy nodular masses are scattered with ulceration and bleeding in and around them. The picture is not unlike that of cancer of the bladder and the differentiation between the two conditions may be difficult.

In the early stages the clinical picture of bilharzial carcinoma of the bladder is so vague that the disease may be mistaken for an exacerbation or recrudescence of an old bilharzial trouble. By the time the symptoms and signs have become definite, the cancer is so advanced that death occurs within a year.

The cystoscope may reveal bilharzial carcinoma in a villous or a nodular form. The villous form is the more common.

Most of the bilharzial changes described in connection with bladder occur in the intravesical parts of the ureter. Except when they lie at the orifice of a ureter such lesions are usually hidden from cystoscopic view. However when the intravesical portions of the ureter is fibrosed and calcified by bilharzial infiltration they present a definite cystoscopic picture.

The ureteral orifice may assume all sorts of shapes and sizes. Its lip may be thickened irregularly by

bilharzial tubercles or nodules. The opening may be plugged and obliterated by a papilloma.

The size of the opening may be markedly reduced. Sometimes the opening resembles a golf hole, as in tuberculosis of the bladder. In some cases it may be retracted and lie on a more posterior plane than the opening of the other ureter. Sometimes it may look normal and admit the tip of a ureteral catheter, but immediately above it the lumen of the ureter may be stenosed.

C. TRAVERS STEPIT, M.D.

Tarozzi, G., and Bucciardi, G. Congenital Narrowing and Atresia of the Urethra (Sui restringimenti e sulle atresie congenite dell'uretra) *Arch ital di urol*, 1932, VIII, 539.

The authors studied two cases of congenital narrowing of the urethra. One was that of a woman who died at the age of fifty-two years and the other that of an infant ten months old. The autopsy and histological findings are reported in detail. In the first case very marked hypertrophy and hyperplasia of the bladder were found.

In a comparison of congenital and acquired strictures of the urethra some characteristic differences were noted. In congenital strictures the hyperplasia of the nerve-ganglion tissue of the bladder which accompanies the hypertrophy and hyperplasia of the muscular tissue is especially marked. The hypertrophy of the muscle tends to overcome the hindering effect of the stricture on the urinary outflow. The serious changes are due to stricture of the ureters consequent upon the hyperplasia.

A. LOUIS ROSI, M.D.

GENITAL ORGANS

Caulk, J. R., and Boon-Itt, S. B. Carcinoma of the Prostate. *Am J Cancer*, 1932, XVI, 1024.

The authors report on 222 cases of carcinoma of the prostate seen at the Barnes Hospital, St. Louis, and in private practice. Cancer of the prostate is responsible for 5.6 deaths in every 1,000 deaths of males. Its prevention requires correct treatment of precancerous chronic inflammation.

In the cases reviewed the diagnosis was made by rectal examination supplemented, when possible, by microscopic examination of tissue removed with the punch. The average age of the patients when they were first seen was sixty-three years. The initial symptoms were those of obstruction, namely, frequency and difficulty of urination. Acute retention in the presence of comparatively mild urinary symptoms is suggestive of malignancy. In a small percentage of the cases the complaints were not referable to the urinary organs but were suggestive of extension or metastasis. The blood picture was not typical, but the red cell count and the percentage of hæmoglobin were distinctly lower in cases with skeletal metastases. On cystoscopic examination it was found that the carcinomatous prostate tended toward a collar arrangement or contracture and was apt to show irregularities and cystic and bullous

changes. Occasionally it presented deposits of fibrin and submucous hæmorrhage. An important feature was a puckering of the mucosa at the sites where the seminal vesicles are in contact with the bladder wall. Of 197 cases, 51.3 per cent presented demonstrable lesions beyond the prostate gland, and in 40.6 per cent the process had extended beyond the prostate and seminal vesicles.

The treatment of choice is the cautery punch operation in conjunction with radium and X-ray therapy. Of the cases reviewed, relief of obstruction was obtained in 72 per cent. Twenty-nine per cent of the patients lived or are living over three years, and 10 per cent over five years.

ANDREW McNALLY, M.D.

Martin and Sermet. Two Cases of Multiple-Tissue Tumors—Cystic Embryomata—of the Epididymis (Sur deux cas de tumeurs à tissus multiples—embryomes kystiques—de l'épididyme) *J d'urologie méd et chir*, 1932, XXXIII, 513.

Whereas acute and chronic inflammations of the epididymis are very common, benign and malignant tumors of this organ are very rare. The authors report two cases of benign tumor.

In the first case, that of a man of seventy years, a tumor the size of a hen's egg, flattened in the transverse diameter and appended to the cord, was discovered in the right half of the scrotum at examination for prostatic hypertrophy. On palpation of the neoplasm two different sections were distinguished. Below and in front there was a smooth portion the size of an almond which was soft or pseudo-fluctuant (puncture yielded no fluid) and very painful on pressure. This was the testicle. Behind and above there was a very hard portion with a surface presenting numerous nodules such as are found in syphilis of the testicle. Here the tumor involved definitely the epididymis and not the testicle. The Wassermann reaction was negative. The patient stated that the tumor had been present for a long time, but did not increase in size or cause pain. Old calcified tuberculosis of the epididymis was suspected. Operation revealed a mixed tumor, an embryonic cyst of the epididymis containing elements of mesodermic origin, ossified fibrous tissue, smooth muscle fibers, and elements of ectodermic origin such as the epithelial covering of the larger cyst and of the microcysts in its wall.

In the second case, that of a man sixty-one years of age who also had enlargement of the prostate, a tumor was found in the left side of the scrotum. The patient stated that the neoplasm had been present all his life, but had never caused any disturbance. It was about the size of a nut and was composed of two parts. Below and in front there was a hard portion with an irregular surface which was about the size and shape of the testicle, while behind this portion there was a soft mass which resembled the epididymis. A syphilitic tumor of the testicle was suspected, but the Wassermann test was negative. The patient consented to removal of the tumor dur-

ing the operation for the prostatic hypertrophy. The neoplasm was found to be composed of connective fibrous, and bony tissue. Difficulties in decalcification rendered it impossible to determine with certainty that the cysts were covered with epithelium, but it seems probable that this was true as they were filled with sebaceous matter as in the first case.

Hinman and Gibson classify tumors of the epididymis into the following two groups:

1. Benign tumors (epithelial, mesoblastic (fibromata, lipomata, leiomyomata) or heterologous. The latter are the cystodermoid tumors.

2. Malignant tumors. Like those of the first group, these may be epithelial, mesoblastic, or heterologous. The latter are the teratomata.

Rubinschew classifies tumors of the epididymis only according to cell type, without regard to their clinical course. He distinguishes the following three groups:

1. Heterotopic tumors, comprising the tumors developing from the primary embryonic cells (teratomata and teratoids) and tumors developing from mesodermal rests or rests of the wolffian body.

2. Tumors springing from the normal tissues of the epididymis, aberrant seminiferous tubules, or interstitial cells.

3. Tumors springing from ordinary tissues, such as sarcomata and lipomata.

So few cases have been reported that it is difficult to say which of these classifications is the better. The authors are inclined to prefer the classification of Hinman and Gibson.

The article is concluded with a review of the literature on benign tumors of the epididymis.

LEON S. MOORE

McClure J., Sangster, H. H., and Carlton, C. H.: The Pathology, Diagnosis, and Treatment of Two Cases of Malignant Disease of the Testicle. *Br J Urol* 193 1 219

Malignant disease of the testicle is comparatively rare. Kelly and Hoepfer estimate from the literature that malignant testicular tumors constitute only from 1 to 3 per cent of all malignant tumors in man.

Tumors of the testicle are classified by Southam and Lissell as follows:

1. Benign (a) teratomata, (b) mixed-cell tumors
2. Malignant
 - a. Carcinomata (1) epithelial-celled carcinomata, (2) spermatocytomata, (3) chorion-epithelioma
 - b. Sarcoma

Diversity of opinion as to the nature of malignant tumors of the testicle has probably influenced surgical treatment of such neoplasms. Today it is generally held that sarcoma of the testicle is especially rare. As the transmission of sarcoma from the primary focus occurs usually through the blood stream and not by way of the lymphatics, it appeared in the past that little was to be gained by subjecting the patient to the dangerous removal of an extensive

area of lymphatic tissue and the surgeon was content with simple castration. Since the carcinomatous nature of the majority of malignant tumors of the testicle has been recognized, a radical operation conforming to radical operations in other parts of the body is performed when carcinoma of the testicle is seen sufficiently early. The authors report two cases in which a radical operation was performed.

The patients were twenty-eight and thirty years of age, a time of life associated with teratomata rather than pure carcinomata. Both presented carcinomatous degeneration of a teratoma, but one of them had an adult type of carcinoma as well. In both, there was an almost painless, continuously progressive solid enlargement of a normally placed right testicle. The testicle was unattached to the skin. It felt nodular and was heavy as compared with its fellow. The epididymis was distinct, and the cord and vas felt normal. No hydrocele and no glandular enlargement was detected on pre-operative examination, and there was no cough or cachexia suggesting secondaries.

The differences between the two patients were few but significant. One of them gave a twelve weeks history starting with trauma. His testicle was the size of a duck's egg and had lost its normal shape. The lymphatic area resected at operation contained no secondary new growth except a cystic tumor connected with the spermatic cord. At operation the latter was not regarded as a lymphatic gland, but subsequently was found to be a lymphatic metastasis. The testicle was the size of a semolina and a teratoma. The latter was undergoing carcinomatous degeneration. Death occurred within six months after the operation.

In the case of the other patient the history was of only six weeks duration. The testicle was the size of a hen's egg, but had retained its shape. It was the site of a teratoma undergoing carcinomatous degeneration. This patient is still alive.

In the diagnosis, absence of transillumination, a recent hydrocele, and the short history made it clear that the tumors were not old hydroceles with thickened walls. In the first case difficulty in excluding hematocoele of the tunica vaginalis led to preliminary castration. As Dew points out, hematocoele of the tunica vaginalis may simulate neoplasm in every particular. In both conditions the swelling is painless, nodular, and neither fluctuant nor translucent. Exploratory puncture is dangerous and inconclusive.

In neither of the cases were the pain and tenderness sufficient for a diagnosis of infective epididymo-orchitis, and in neither was there any evidence of urethritis.

Tuberculous epididymo-orchitis was excluded by the absence of involvement of the epididymis and vas and absence of tubercles in the genito-urinary tract. Syphilis of the testis was deemed unlikely because the Wassermann reaction was negative.

The diagnosis of these cases confirmed one of Dew's observations, viz. that the presence of hydro-

cele depends on involvement of the epididymis. In neither case was the epididymis involved and in neither was there a hydrocele.

C. TRAVERS STEPITA, M.D.

MISCELLANEOUS

Reiss. Lymphogranuloma Inguinale (Ueber lymphogranuloma inguinale). *Ztschr. f. Geburtsh. u. Gynaek.*, 1932, **CL**, 411.

The causative organism of lymphogranuloma inguinale has not yet been discovered. Animal experimentation has shown transmission to the twelfth generation. The specificity of the disease was thus established. Levaditi established it also when he produced the disease in a paralytic by inoculating him with material from the inguinal glands of a

monkey suffering from the condition. The diagnosis has been facilitated most by Frei who discovered a specific skin reaction. The test depends upon the fact that the skin of persons suffering from the disease is sensitive to the intracutaneous injection of material from an infected gland.

The frequency of rectal stricture in women is explained by the anatomical relations in the female to which attention has been called by Jersild, Bartels, and Biberstein.

In the skin clinic at the Charité Hospital of Berlin it has been found that some cases heal spontaneously and others after conservative treatment and incision. In stubborn cases X-ray treatment is successful. Others have obtained good results with organic antimony and copper compounds and with intracutaneous injections of tuberculin. SAMUEL (G).

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

RÉSUMÉ. B.1: The Importance of Chronic Bone Abscess from the Point of View of the General Practitioner (Die Bedeutung der chronischen Knochenabszesse am Gesichtspunkte des praktischen Arztes) *Osteuropa* 1933 22, 151

Bone abscess always begins in youth. Garré considers it one of the rarest of the sequelæ of acute osteomyelitis. He attributes its origin to the entrance of micro-organisms of greatly reduced virulence—chiefly staphylococci—in the form of emboli into the blood stream and their lodgment in the bone marrow favored by the mechanical conditions of the blood circulation in the bone and the hemostatic action of the bone marrow. The infected embolus gives rise to an inflammation which begins as a granulation infiltration. The bony tissue is destroyed, with softening of the part attacked, and a cavity is formed. In the vicinity of the cavity a reactive thickening of the bone occurs. The predilection of the marrow is increased by the effects of trauma.

The portals of entrance of the micro-organisms are the skin and mucous membranes. The tonsils are important factors. The bacteria lodge most commonly in the metaphyses of the long bones, but sometimes also in the diaphyses and the epiphyses. In the majority of cases the tibia is attacked. The abscess is generally located centrally in the bone marrow. It varies in size from that of a pea to that of a walnut. It may be round, oval, or pear-shaped. A pyogenic membrane is not characteristic. Its contents are a thin or creamy fluid or a dirty gray granulation tissue in thick, foul greenish pus in which the staphylococcus aureus in a highly virulent state is demonstrable. In cases of central abscess the periosteum is unchanged, but in those of abscess lying near the cortex there is periosteal thickening and the periosteum takes part in the bone formation. The pus rarely raises the periosteum, and still more rarely breaks through and causes the formation of a fistula.

The diaphysis of a long bone is an uncommon location for bone abscess. Here the suppurative focus is not in the medullary cavity but in the cortical tissue beneath the periosteum.

A number of abscesses may develop simultaneously in one bone, and abscesses may form in several bones at the same time. This multiplication of foci may be primary or due to metastasis.

Abscesses are formed in the flat bones much less frequently than in the long bones, possibly because the flat bones are much less exposed to injury. The action of the abscess on the bone is manifested by thickening and the formation of a bony hard shell

around the abscess. Disturbances in the growth and resistance of the bone also occur. When the abscess is in the vicinity of the epiphyseal cartilage and does not destroy the cartilage but exerts a continuous irritation upon it, there is lengthening of the extremity. As a consequence of the continuous irritation, longitudinal growth is increased and curvatures of varying degree and character may result. Spontaneous fracture is a rare sequelæ. The most frequent complication is intermittent articular edema, which may completely conceal the abscess.

The most severe complications arise as the result of an increase in the virulence of the bacteria contained in the abscess produced by trauma, overextension, or some unknown cause. Under such conditions metastasis and a fulminating general infection may take place.

The anatomical picture has distinct clinical characteristics. Nearly always the patient gives a history of a suppurative process such as tonsillitis, folliculitis, furunculosis, osteomyelitis, or postperitonsillar fever or of a recent infection such as pneumonia or typhoid fever. The disease usually begins between the fourteenth and eighteenth years. The onset is characterized by insidious attacks of indefinite pain, a slight increase in the temperature and diffuse swelling and reddening of the overlying skin at the site of the pain. At intervals of weeks or months, attacks with aggravated symptoms may occur usually excited by a trauma.

A correct diagnosis is assured by the roentgenogram, which shows a light round or oval spot with smooth margins surrounded by the shadows of bone undergoing sclerosis. The condition must be differentiated from acute inflammation of a joint, tuberculous localized osteitis fibrosa, echinococcus cyst, osteogenic sarcoma, and syphilitic bone disease. It is often confused with tuberculosis because both diseases tend to localize in the end of a bone near a joint. The diagnosis is particularly difficult when the abscess is of chronic onset or situated in the epiphysis and when it occurs in a flat bone or the diaphysis of a long bone. From the standpoint of treatment the differential diagnosis between bone abscess, bone tuberculosis, localized osteitis fibrosa and echinococcus cyst of bone is of secondary importance as in all of these conditions operation is the only treatment to be considered. The differentiation from syphilitic disease, especially centrally situated bone gummas is important. Boring pain at night is equally characteristic of both conditions. Multiple foci and differences between the individual foci speak against gumma. The roentgenogram and the Wassermann reaction should solve the problem.

The treatment of bone abscess requires wide opening of the bone. Boring into the bone with a bullet

extractor is not enough. The suppurative focus should be widely exposed, the abscess curetted and the cavity packed with tampons. Healing usually requires from three to ten weeks, but the symptoms generally cease immediately after the operation. After proper surgical treatment the swelling of the joint disappears and the distressing night pains do not recur.

EDMERICH ILLIS (2)

Knaggs, R. L. A Report on the Strangeways Collection of Rheumatoid Joints in the Museum of the Royal College of Surgeons. Part I. *Brit J Surg*, 1932, *xx*, 113.

In 1908 a special research hospital was erected in Hills Road, Cambridge, and here the various researches into the nature of chronic arthritis were carried out by Strangeways and the co-workers who from time to time became associated with him.

The Strangeways' collection of pathological specimens includes about 250 specimens of chronic arthritis and a large number of microscopical sections. There is also a typed manuscript in which Strangeways described the macroscopical and microscopical peculiarities observed in his studies of diseased joints. The manuscript is illustrated by photographs of specimens and microscopical sections.

The work was interrupted by the war and the taking over of the hospital by the military authorities. When Strangeways was able to resume his labors he was gradually led to the study of tissue culture and its bearing upon the growth of articular structures, especially cartilage.

The majority of the diseased joints were obtained from infirmaries inmates, many of whom were advanced in years and hopelessly crippled. Others were obtained from young persons, in many instances after surgical excision. Most of the specimens showed advanced disease. Many cases were represented by more than one joint, and in several instances a series of joints were obtained from a single individual.

The salient pathological features of osteo-arthritis are

- 1 Vertical fibrillation and splitting of the articular cartilage, which becomes worn away at the sites of pressure and friction.
- 2 Sclerosis, eburnation, and grooving of the underlying articular bone.
- 3 Osteophytic outgrowths, more particularly at the articular margins (lipping) and not infrequently on the articular surfaces.

Those of rheumatoid arthritis are

- 1 Erosion of cartilage independent of friction or pressure, e.g., at the articular periphery.
- 2 The formation of fibrous adhesions and of fibrous tissue between the articular surfaces.
- 3 Fibrous or bony ankylosis.
- 4 Absence of lipping and other bony changes distinctive of osteo-arthritis, such as eburnation and grooving.
- 5 Atrophic changes, which are usually pronounced.

The clinical differences between the two conditions are equally distinct. In osteo-arthritis there are

- 1 Pain, stiffness, and effusion into the joint, all of which may be slight.
- 2 Grating or crepitation on movement.
- 3 Deformity from osteophytic outgrowths.
- 4 Restriction of movement. Restriction to the point of fixation is due to locking of marginal osteophytes. Adhesion or ankylosis between articular surfaces is rare except in certain small joints in which movement is very limited normally.

Rheumatoid arthritis is characterized by

- 1 More evidence of inflammation, usually of a subacute character.
- 2 A tendency of the swollen joints to assume a fusiform shape due to the involvement of the peri-articular tissues.
- 3 Marked pain and limitation of movement, often associated with contractures and muscular atrophy and occasionally with displacement.
- 4 A very marked tendency toward rigid ankylosis, which is sometimes bony but more often fibrous.

A study of these intermediate cases in the Strangeways collection led Knaggs to the conclusion that osteo-arthritis and rheumatoid arthritis are manifestations, at opposite ends of the scale, of a single disease which is of toxic origin. Knaggs believes that when the tissues are healthy and robust, the toxic irritation acts as a stimulus to growth processes and osteo-arthritis results, whereas when the vitality of the tissues is poor, a definite inflammatory reaction may be excited and if the tissues are unable to maintain their vitality in the presence of such a reaction, degeneration or even disintegration results. In either case rheumatoid arthritis develops.

Gout is very closely related to the rheumatoid affections. The one diagnostic feature of gout is a deposit of urate of soda. When this is absent, a gouty joint cannot be distinguished from a joint affected by osteo-arthritis or rheumatoid arthritis.

At the present time uric acid and the urates are attributed to faulty purin metabolism. They are not thought to be the cause of gout, but are believed to indicate the occurrence of certain metabolic changes which, in addition to the urate deposit, produce simultaneously other bodies having toxic effects.

Bony ankylosis usually begins with the fusion of granulation tissue springing from two opposing articular surfaces denuded of cartilage. Frequently similar tissue from the synovial membrane is incorporated with the interosseous bond. Into this area of fibrous granulation tissue trabeculae advance from opposite sides and coalesce. Medullary spaces then form, and ultimately fusion of the cancellous tissue and medulla of the separate bones occurs. Bone is usually the result of metaplasia of the fibrous tissue.

No doubt in elderly persons the tissues in general, including those of the joints, are much less robust

than in young persons and ossification is less active. Consequently bony ankylosis may be expected to be more common when arthritis develops in early life than when it occurs in middle life or old age. Juvenile cases show that the form of arthritis which a susceptible joint may develop in rheumatoid arthritis does not depend upon age alone, and the fact that in one case the disease ran its course and reached its climax before the patient was twenty years of age proves that fibrous degeneration of bone and cartilage is not a purely senile change.

PRATER LEE ST, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Ingelström, P.: Early Treatment of Acute Osteomyelitis (Traitement précoce de l'ostéomyélite aiguë) *Rev. d'orthop.* 33, 2225, 433

In the stage of general bacteremia which follows the initial infection in osteomyelitis surgical intervention may fail to prevent a fatal termination. The use of vaccines and immunizing sera and other general medical measures is indicated.

Necrosis of the bone results from embolism. Theoretically the embolus may become lodged in (1) a subperiosteal vessel, causing an abscess without bone necrosis (2) a superficial cortical vessel, causing a lamellar sequestrum (3) a nutrient artery forming a sequestrum of a cortical segment or (4) a larger vessel resulting in a complete anular necrosis. When the endosteal and periosteal circulations are obstructed, the bone is unable to regenerate after necrosis. Clinically the picture is never quite so simple as the various conditions may occur simultaneously or one may supervene on another.

Although almost all clinicians of experience advise immediate and thorough drainage, including wide opening of the cortex, as soon as the diagnosis of acute osteomyelitis is made definitely there are a few who think it best to wait from one to several days. Among this minority are Vignard and Lasserre, who hold that opening up of the soft tissue and bone in the virulent stage of the infection favors wider spread of the bacteria with greater local destruction and more danger to life.

The question as to whether or not the cortex should be opened has long been disputed. Some surgeons (among them Broca and Delbet) are guided by the appearance of the bone when the periosteum is raised. If the bone appears red and vascular they do not open the cortex, but if it is white and does not bleed on puncture they make a generous opening. At present French surgeons follow the advice of Le Fort to open the cortex whenever the general condition is very poor and when the bone is white and bloodless at the bottom of the abscess.

Lansclongue recommends making several openings if a drill is used. Leriche and many other surgeons, including the author, open the cortex with a chisel from the epiphyseal cartilage at one end to good bone at the other making a wide cavity. How-

ever no hard and fast rule can be laid down. The technique must be determined according to the severity of the infection in the particular case. Sterilization with antiseptics after opening is said to shorten the time of convalescence and prevent extensive sequestration. Hadling used Dakin's solution whereas Ochsner, Brown, and others employ phenol of various strengths followed by alcohol.

As reported by Starr, Robertson, and Platt, limited drilling of the bone—the formation of only one opening to relieve the pressure—sometimes results in a cure without necrosis. However such a procedure would seem to be applicable only to very early cases.

The author cites mortality statistics of various clinics and surgeons and compares the results of early and radical opening of the cortex with later and more conservative surgery such as mere incision of the periosteum to establish drainage. The mortality is lower and there is less sequestration in the cases treated more conservatively. Sudden opening of the bone and extensive curettage throw into the blood stream a shower of organisms which the patient may be unable to resist. When a simple incision is made to evacuate the subperiosteal pus, the trauma is minimal and the bone will establish its own drainage through the Haversian canals.

Resection of a total section of the shaft or of all of the shaft has been done by many surgeons since as long ago as 1761. This is not to be compared with sequestrectomy. It consists in the removal of the diseased portion of the bone to get rid of the infection. The author cites many cases in which it was done successfully and the shaft regenerated under the periosteum which was spared, sometimes with little or no shortening. In discussing the technique used by Laveuf the author states that the incision should be large and the periosteum should be left attached to the surrounding muscles as much as possible. The shaft should be cut 1 cm. beyond the diseased area and at the epiphyseal cartilage and the intervening section removed. To avoid persistent ulcers and discharge, necrotic bone must be removed. No irrigation, antiseptics, or drainage should be employed, and the wound should not be dressed often.

Some of the objections to resection are (1) the danger of failure of regeneration, (2) poor quality and shape of the new bone and (3) the uncertainty of removing all of the infection, which may be diffuse in the bone. Laveuf answers all of these by stating that careful analysis of failure in a given case will probably reveal an error in technique or in judgment regarding the stage at which the resection was done. The most propitious time for the operation is from the second to the eighth week. The author reports four cases in detail.

In ninety-four cases treated by conservative intervention the mortality was 15.95 per cent. In cases reported by other surgeons it ranged from 13 to 34 per cent. It is highest in cases of infection of the humerus and in patients from ten to fifteen years

of age. If the patient survives the operation by two weeks he is relatively safe.

Statistics regarding the mortality and immediate results of different methods of treatment justify the conclusion that trephining of the cortex may be done without hesitation whenever there is an evident bone lesion. A study of the subsequent course, especially as regards the extent of sequestration, shows that in cases in which trephination was performed the condition improved better than in those in which only simple incision of the soft tissues was done.

Of seventy-three cases treated on the service of Le Fort, a good end-result is known to have been obtained in forty-two. The author assumes that a cure was obtained also in the cases of some of the twenty-five patients who could not be traced.

The immediate results of primary resection are sometimes striking. The temperature and pulse rate decrease and the general condition improves. This operation may be regarded as no more radical than appendectomy. In some acute cases the question of amputation may arise, but patients will more readily consent to resection and the latter procedure may accomplish as much as the more radical operation. Secondary resection is followed by more rapid cicatrization than trephination. In fact, if the late functional or orthopedic results were uniformly satisfying, the advantages of resection would be incontestable. However, the occasional failures of regeneration, the poor functional results even with regeneration and the deformities, if near joints, tend to deter most surgeons from using this method.

WILLIAM ARTHUR CLARK, M D

Zillmer What Has the World War Taught With Regard to the Treatment of Gunshot and Peace-Time Injuries of the Joints? (*Welche Lehren ergeben sich aus den Erfahrungen des Weltkrieges hinsichtlich der Behandlung von Schussgelenksverletzungen und Friedensgelenksverletzungen?*) *Veröffentl. Heeresanwaltschaft*, 1932, LXXXII, 5

At the beginning of the World War surgeons were guided in their treatment of recent gunshot wounds of joints by the principles laid down by von Bergmann. As with the progress of the war, external joint injuries became more numerous than internal joint injuries, the conservative procedures failed. The first to demand early operation on gunshot wounds of joints was Payr, who demanded the immediate removal of all tissues suspected to be infected and of all foreign bodies, followed by primary closure of the joint capsule and filling of the joint with an antiseptic. The antiseptics used included a 3 per cent solution of carbolic acid, the phenol-camphor mixture of Chlumsky, iodoform-glycerin, a 10 per cent iodoform-beta solution, Morgenroth's quinine derivatives in the form of vuzin, and Carrel-Dakin solution. According to Landis, the most important parts of the treatment were the early operation and the primary suture of the capsule. Comminuted fractures demanded resection, and threatening necrosis of the lower portion of the limb and

danger to life from sepsis or gas gangrene made amputation necessary. The chief advance lay in the recognition of the fact that drainage of a joint not only endangers its function, but also favors secondary infection.

In place of the pathologico-anatomical classification into serous, serofibrous, suppurative synovitis and suppurative arthritis, Payr introduced the clinically important classification of articular empyemata and capsular phlegmons, emphasizing the favorable prognosis of the former and the destructive character of the latter. For the empyemata, Payr advised small incisions into the deepest parts of the joint, filling with consequent unfolding of the capsule, closure of the joint capsule, and early movement. For the capsular phlegmons he recommended extensive arthrotomy and drainage.

Much later, Laewen recommended bilateral deep incisions with bilateral horizontal resection of the posterior portions of the femoral condyles for better drainage of the phlegmons.

The treatment of gunshot injuries of joints, particularly of the knee joint, underwent a similar development also in the armies of the Allies, who also abandoned drainage.

The results obtained by the Belgian surgeon, Willems, who ever since 1908 had opposed immobilization of diseased joints, are still under discussion. To prevent muscle atrophy and ankylosis, Willems treated war injuries also by active movement. Recent, operatively treated injuries, he closed completely, but when suppurative arthritis had already developed he made bilateral incisions without drainage and facilitated the escape of the pus by active movements, thereby relieving the pain caused by the pus. This procedure was adopted also by French surgeons, but was eventually abandoned by them.

The third step in the development of the treatment of joint injuries was made by the Americans, who demanded débridement, lavage of the joint with ether or Carrel-Dakin solution, suture of the joint with drainage for about twenty-four hours, immobilization, and passive movement and massage after from eight to ten days.

Zillmer summarizes the requirements as indicated by the experiences of the War as follows:

- 1 Mechanical and chemical disinfection of the wound and joint
- 2 Suture of the capsule, possibly with suture of the soft parts
- 3 Early active mobilization

This treatment is applicable also to accident surgery.

In typical ax injuries of the knee joint in lumbermen, Wittek has obtained good results with this treatment without filling the joint with an antiseptic. Other surgeons recommend filling the joint with phenolcamphor which produces hyperæmia, relieves pain, and exerts a mechanical dilating action.

Fischer of the Schmieden Clinic recommends the use of iodoform-glycerin because it has an inhibiting action on all types of bacteria, whereas nivalol

is effective mainly against cocci. The inhibition of growth is sufficient.

In conclusion Zimmer reports a case of pithfork puncture of the knee joint in which he obtained a good result from operation and the use of rivinol.

PURCE (X)

Fèvre, M.: The Surgical Treatment of Scoliosis (Traitement chirurgical des scolioses) *Rev. Française* 1932 xxxix, 389.

As early as 1830 Guérin performed myotomy for the correction of scoliosis. In 1880, Volkmann performed costal resections. In 1900, Chippault reported the results of fixation operations. Although Chippault sought to immobilize the spine with wire, he seemed to realize that this method was inadequate and suggested that, since the deformity is bony, the operative treatment should attack the bone itself. Thirteen years later, after methods for bony ankylosis of the spine had been brought out by Hibbs and by Albee, these methods were first used for scoliosis by Galloway and Kidner independently. Since then, arthrodesis for scoliosis has been practiced by many surgeons in America. In 1931 Hibbs published the results in 360 cases. French surgeons did not have an opportunity to take up this method until after the war. Those who first used it in 1919 and 1920 were Leclerc, Lance, Tuffier and Mauchair. In the period from 1930 to 1931 statistical reports were published by Lance, Bureau, Ombredanne, Fèvre, and Mathien. In Belgium, Goffin and Moreau reported cases in 1930. In Germany Hoesly seems to have been the first to employ the method. It is now being used more and more in all countries.

Reasoning that scoliosis is a deformity caused by muscle contracture analogous to that resulting in torticollis, Guérin in 1830 began performing myotomies on the concave side. He claimed to obtain some correction, but others said the improvement was due to subsequent orthopedic treatment. After about fourteen years the method was abandoned. About 1875 it was revived by Sayre and by Volkman, but subsequently was again discarded.

In 1889 Volkman performed resection of ribs on the convex side and in 2 cases obtained slight improvement in the deformity. Hoffa combined this procedure with resection of transverse processes on the same side. Similar resections have been done by Gaudier, Mauchair, and others in France and by Whitman and Kleinberg in America. A certain amount of cosmetic improvement is sometimes obtained by this method, and Whitman claims several other advantages, viz. a contracting scar in a favorable place, a source of bone graft, and improvement of pulmonary ventilation.

The operation of bilateral rib resection which was proposed by Hoffa, tried and discarded by Ryerson, and performed with some success by Sauerbroch has very little to support it. Theoretically it is supposed to free the vertebral column so that correction can be obtained, but practically it involves a great deal of surgery for very slight improvement. The

same may be said of resection of ribs on the concave side and all other rib operations.

Arthrodesis was first done for paralytic scoliosis. Many surgeons who have not performed this operation admit that it is sound in principle. All are agreed that in severe cases there is justification for sacrificing mobility for stability. Some wait two years after the acute attack of poliomyelitis, some four years, and some less than sixteen months.

In congenital scoliosis arthrodesis is seldom indicated, but some surgeons operate for this condition, especially if it is getting worse under conservative methods. If there is a definite anomaly in the lumbosacral region, the vertebrae should be ankylosed in this region. Operation should be performed also in arthritic cases when conservative measures fail.

So-called "essential" scoliosis may be classified according to degree into the following groups: (1) those which can be corrected or held by orthopedic apparatus, (2) the more severe forms which get worse in spite of braces, (3) those which recur as soon as support is removed, (4) severe scoliosis with increasing kyphosis, and (5) painful scoliosis in adults. In scoliosis of the first group there is of course no reason for operation, but in those of the second group arthrodesis is indicated if roentgenograms show an increase in the deformity. Twelve cases of the latter type were operated upon in Ombredanne's clinic and 5 by Lance. In scoliosis of Group 3 the patient may choose between wearing a brace for life and operation. Usually patients will submit to operation after five or six years of conservative treatment. In scoliosis of Group 4 the general condition is often a contra-indication to operation, but Lance has operated upon 7 cases of this type after building up the general resistance. Many surgeons who are not in favor of operation on children admit the value of surgery for the adult, especially when the patient is suffering from pain due to muscle contracture or to pressure on nerve roots due to the deformity. Most of the many operative cases reported were those of patients between twenty and fifty years of age.

In scoliosis complicating or following tuberculosis of the spine or lungs there is no contra-indication to arthrodesis.

Very few patients with scoliosis live to old age. Of 660 investigated by Kleinberg, only 2.5 per cent lived longer than forty years. Death results from a intercurrent infection because resistance is low. Therefore early arthrodesis may be justified as it will preclude severe progressive deformity. The lowest age limit varies with different surgeons. Although Hibbs has operated on paralytics as early as the third year of life, other surgeons place the lowest age limit at from nine to twelve years and the author believes it should be fifteen years.

There are many social reasons why a patient will submit to operation as an alternative to the wearing of a brace or corset. Among these are occupations and marriage.

The mortality from the operation ranges from 1 to 3 per cent. It is due chiefly to shock, but also to

some cases to hemorrhage and infection. The beneficial results of arthrodesis are many. The general condition is improved, fatigue is diminished, and the breathing capacity is increased. Although no autopsy reports are available, complete bony ankylosis has been demonstrated in many cases in which a necessary second operation afforded an opportunity for examination of the vertebrae. Maintenance of the correction obtained by orthopedic treatment and the prevention of an increase in the deformity are all that can be expected from fixation operations. According to these criteria, the clinical results have been good in 91 per cent of Kleinberg's cases, 90 per cent of Whitman's cases, 82 per cent of Hibbs' later series of cases, and 90 per cent of the author's cases. The functional results have been surprising. Patients with 7 or 8 vertebrae ankylosed are able to go back to work without difficulty and most of them can bend and touch the floor with straight knees. Relief from pain has been complete in 15 out of 18 cases in Hibbs' clinic and in 14 out of 15 cases operated upon by the author.

Complete failures are rare. They may be due to insufficient postoperative immobilization, fracture of the graft, pseudarthrosis at one or more points, sloughing and elimination of the graft as a foreign body, poor judgment in the number of the vertebrae fused, or failure to fuse high enough or low enough.

Since no correction can be attempted at the time of the fusion operation, the spine must be made as straight as possible before the operation. This may be done by the use of plaster jackets with hinges or some other mechanism which places the patient in an overcorrected position, or by the slower method of longitudinal and transverse traction with the patient in bed. Six or eight weeks are usually required for this preliminary treatment. Improvement of the general health is necessary in the preparation for operation. The patient's resistance must be built up by exercises and diet. Under no circumstances should the surgeon allow himself to be hurried into operating on a patient with scoliosis.

Of great importance is the determination of the number of vertebrae to be fused and the level of fusion. As a general rule the fusion is done from the sound vertebrae on one side of the curve to those on the other side. Cervical fusion should be avoided. Even high dorsal fusion is usually unnecessary. Below the center of resistance, i.e., from the ninth and tenth thoracic vertebrae, it is unwise to stop at the fourth or fifth lumbar vertebra as the strain on the one joint left below may prove so great as to be constantly painful. If low fixation is to be done, the graft should go down to the second sacral spinous process to obtain a firm foundation. It has been said that in cases with a double curve the primary curve is the one to be fused, but it is often doubtful which curve is primary and which is compensatory. In America there is a tendency to fuse the thoracic curve, while in France the lower curve is fused more often. Especially in the cases of paralyses, it is essential to do extensive fixation and practically always to in-

clude the sacrum. A hinge between the sacrum and a long line of fused vertebrae is a poor result.

There is a choice of 2 methods of fusion—multiple arthrodesis by the Hibbs method and bridging with grafts from the tibia. While the Hibbs operation, involving curettement of all of the joints between the articular processes, is difficult, it is possible even on the concave side, as is evidenced by 428 cases in which it was performed by Hibbs and his associates. It is the method preferred by many surgeons and should be known by all, as patients occasionally refuse to have a scar made on the leg. In the use of the graft method the graft should be placed along the denuded bone at the base of the spinous processes on the concave or the convex side or both sides. The use of a tibial graft gives a good ankylosis. The original technique of Albee must be modified because accurate splitting of the spinous processes is practically impossible on account of the deformity. Albee places the graft near the prominent transverse processes on the convex side instead of trying to put it into the spinous processes. The Halstead method consists in cutting the spinous processes transversely at their bases, turning them to one side, slipping in a tibial graft on the fresh bone surfaces, and bringing the processes back over the graft. In the opinion of the author, the operation of choice is the combination of the Albee and Halstead techniques which is used by Huc. In this procedure the spinous processes are first split so that one side is heavier than the other. Access is thus gained to the bases of the processes and the processes are cut at the base. The tibial graft is then inserted along the base and the processes are sutured over it. When this method is employed the hemorrhage and shock are much less than with methods which require extensive dissection down to the laminae on each side.

The dangers of the operation include possible injury to the dura mater or the pleura. Spina hifida occulta may complicate the picture. Postoperative shock may be severe, but may be avoided or diminished by placing the patient on his back.

The postoperative care should consist in rest in bed in a plaster jacket for a period ranging from a month and a half to three months. Before the patient is allowed to get up the degree of consolidation should be checked by roentgen examination. When the patient is allowed to get up the spine should be protected by a celluloid corset, a plaster jacket, or a brace for from three months to a year. This support should then be discarded gradually by removing it first for a few hours at a time and then at night.

WILLIAM ARTHUR CLARK, M.D.

FRACTURES AND DISLOCATIONS

Schaanning, C. K. The Treatment of Fractures of the Shafts of the Long Bones, with Particular Reference to Operative Treatment. *Acta chirurg. Scand.*, 1932, lxx, 1.

This report is based on 260 cases of fracture of the diaphyses of long bones which were treated at the

Rikshospitalet, Oslo. Eighty (31 per cent) were treated by operation, and 42.5 per cent of the fractures operated upon were compound.

In the follow-up of the total number of patients it was found that 93 per cent had regained their full working capacity, 7 per cent had some disability and 1 per cent were dead. The corresponding percentages for those who were treated by operation were 87.5, 11, and 1.5 and the corresponding percentages for those not operated upon, 94, 5 and 1.

The therapeutic procedures included plating, which was done in 33 cases (in 31 with Lane plates and in 2 with Lambotte plates), open reduction without the introduction of a foreign body, which was done in 25 cases, and encasement with Parham's band, which was done in 9 cases. A few cases were treated by suture or the use of ivory pegs or a graft. Eight fractures which were amputated at the outset are not included in the discussion.

Decidedly the best results were obtained from plating and encasement.

In compound fractures there is much less chance of obtaining a good end-result than in simple fractures. In compound fractures operation is associated with greater danger of infection. Of the surgically treated compound fractures reviewed by the author infection occurred in about 30 per cent, but in every instance it was local. Scheuermann emphasizes that operative treatment of a compound fracture should be undertaken only after treatment of the wound to reduce the risk of infection and after attempts at manipulative reduction have failed.

In operation for simple fractures the danger of infection is minimal.

The end-results of the operative treatment of fractures is influenced unfavorably by advanced age. The author believes this may be due to the fact that in the cases of old persons only the most difficult fractures are chosen for operation.

The operative risk is decreased by avoidance of general anesthesia.

The period of convalescence is longer in surgically treated cases than in those not treated surgically.

In none of the cases reviewed did pseudarthrosis develop.

In surgically treated cases the period of convalescence and the length of time elapsing before the onset of consolidation are considerably shorter when a foreign body is introduced to support the fracture than when only simple reduction by the open method is done.

The author concludes that operative treatment is an excellent and indispensable adjunct in the treatment of epiphyseal fractures when the ordinary manipulative measures for reduction are insufficient.

Ghormley, R. W., and Mroz, R. J.: Fractures of the Wrist. A Review of 176 Cases. *Surg. Gynec. & Obst.* 93, 1: 377

Of the 176 fractures reviewed by the authors, 87 were fresh and 89 were old.

Colles fractures are grouped as comminuted and not comminuted. The term impaction is not employed. In the authors' opinion it is most important to determine whether comminution is present or not. Comminution occurred in slightly fewer than half of the cases reviewed.

Fracture of the styloid process of the ulna occurred in approximately 63 per cent of the cases. The authors believe that injury to the distal radioulnar joint must occur in many of these cases. Often definite separation or comminution of the ulnar border of the articulating surface of the radius is seen in the roentgenogram. Swelling and effusion occur along the flexor tendons almost always. They may prolong the limitation of motion in the flexor tendons and are particularly troublesome if the patient does not use his fingers early in the treatment.

Injury to the nerves was not common in the cases reviewed, but may be present more frequently than is evident.

Fracture of the styloid process of the radius is most common in backfire fractures. It is less often displaced than other fractures of the wrist. In 2 of the authors' cases it was accompanied by fracture of the styloid process of the ulna and in 1 case by fracture of the scaphoid and capitate bones.

Epiphyseal separations constitute about 13 per cent of all acute fractures of the wrist. Greenstick fractures and fractures of both bones of the forearm near the wrist are more common in children than in adults.

The treatment of acute Colles fractures consists of accurate reduction and fixation and early motion. Reduction is essential. Colles fractures very seldom, if ever, occur without some deformity which may be revealed by careful physical and roentgenographic examination. While slight deformities may be overlooked at the time of treatment, they will not be overlooked by the patient later on.

The choice of anesthetic is important because anesthesia is usually necessary. Many surgeons advocate local anesthesia, but Ghormley and Mroz prefer general anesthesia.

For fixation the authors prefer two splints of plaster of Paris, one on the dorsal aspect and the other on the palmar or volar aspect. Properly applied splints allow free motion of the fingers, which should be encouraged. Very little padding should be used between the skin and the plaster splints. The patient should be warned of the danger of swelling, and should be seen at least once within the first twenty-four hours after the reduction.

Restoration of function can be hastened by daily hailing massage, and active exercise. Roentgenograms should be taken after ten days or two weeks.

In fractures of the styloid process of the radius without displacement a splint should be applied for relief of the pain. Active movements should be possible within a week and the splint should be removed after two or three weeks at the latest.

An epiphyseal separation should be reduced at once under anesthesia. Fractures of both bones near the

wrist is an entirely different problem if displacement occurs. Satisfactory reduction often requires operation. Reduction should be followed by splinting in a straight position with either plaster or plaster on board splints.

In fractures of the scaphoid bone, reduction can be accomplished by manipulation. The fragments are best held in position by dorsal flexion with some radial deviation of the wrist. It seems to be generally agreed that fixation is necessary for from four to six weeks.

The authors followed up their cases by personal examination whenever possible or by letter of inquiry. The results were considered good if deformity was minimal or absent and if there was a normal range of motion without pain. They were graded as fair if there was deformity sufficient to bother the patient and if motion was limited, whether pain was

present or not. They were considered poor if there was a decided deformity with or without limitation of motion and with or without pain.

The cases of old fractures reviewed by the authors were those in which the injury had been present two weeks or longer. In the study of old Colles fractures the attempt was made to determine the causes of the complaint which brought the patient to consultation. The most important complaints were deformity and stiffness. Nearly always, these were associated with some degree of pain.

In cases of old injury in which operation was performed the results were good enough to justify a more extensive trial of the procedure used.

In the last fifteen years a great deal of attention has been paid to backfire fractures. In the cases reviewed by the authors there were 19 fractures of this type.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Leriche, R., and Stricker, P: The Place of Suprarenalectomy in the Conservative Treatment of Juvenile Arteritis of the Thrombo-Angiitis Type (Place de la suprarenalectomie dans le traitement conservateur des artérites juvéniles du type thrombo-angéite) *Presse méd. Par.* 1933, 21, 137

In the treatment of thrombo-angiitis the suprarenalectomy of Oppel has not achieved the place it merits. While its indications are difficult to establish, in certain cases it gives astonishing and lasting results.

In the period from 1915 to 1932 the authors performed suprarenalectomy nineteen times. In twelve cases it was done for thrombo-angiitis of the Buerger type.

When the anatomopathological conditions present in the arteries are irreparable, an operation which is able only to modify the action of the pathological vasoconstriction cannot be expected to render permeable arteries which are obstructed over a considerable extent.

In thrombo-angiitis, conservative operations have only a limited application. As it is very difficult to determine how much of the peripheral arterial system remains permeable, it is impossible always to determine the indications for a conservative operation with certainty. It is to be hoped that in the near future arteriography according to the method of Raynaldo dos Santos and his coworkers, Lamas and Caldas, will solve the problem. When this procedure shows us that certain segments of the large trunks are still permeable and that consequently improvement of the peripheral circulation may be expected from suppression of the vasoconstricting influences or from provoked vasodilatation, conservative methods will be indicated. When it shows complete impermeability of the femoral vessels and their terminal branches, amputation will be necessary.

The results of suprarenalectomy depend on the state of the peripheral vessels. If the operation is done when the arterial routes are still open in the foot or in the leg, a functional cure may be obtained even if the femoral artery is obliterated. After the operation the pains will cease, the trophic disturbances will disappear, the danger of gangrene will be removed, and the intermittent claudication will progressively decrease. If the operation is done when most of the arterial passages are obstructed by segmental obstructions, the pains will cease, the trophic disturbances will disappear and the danger of gangrene will be removed, but the intermittent claudication will persist without change and, following slight trauma, the patient will frequently develop small cutaneous ulcerations which will be difficult to

heal. However even in these cases, femoral sympathectomy or the resection of an obliterated arterial cord may have the effect of hyperemia and lead to rapid healing.

When gangrene is already present and when the foot and leg are cold and the skin is purple, spotted with red plaques, and phlyctenular, neither suprarenalectomy nor sympathectomy will be able to prevent amputation.

Suprarenalectomy and sympathectomy are effective in cases in which the disease has not advanced too far, has not caused serious mutilation, and has not produced a state of menacing gangrene—cases in which oedimetric examination of the limbs by stages (first, the lower middle, and upper third of the leg, and the lower and middle thirds of the thigh) shows that circulation is still possible. If there is no occlusion at these levels, there is little chance that suprarenalectomy or sympathectomy will be of benefit.

When there is no occlusion as far as the middle third of the thigh, when the pulsations of the common femoral artery are definitely weak, when hot baths are ineffective, when the foot is livid, and when the toes are cyanotic and present reddish plaques and edema, the disease is far advanced and there is little chance that amputation may be avoided. When gangrene is definitely present, amputation is indicated definitely.

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Suprarenalectomy as performed by the authors through a subcostal incision on the left side with or without resection of the twelfth rib is often difficult. In the nineteen cases to which Leriche and Stricker performed it there was only one death, and this death did not occur in a case of thrombo-angiitis.

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for five years was obtained. In five cases the operation failed completely, and in two cases it was followed by recurrence. KELLOGG SPEED, M.D.

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The author removed an ovarian tumor and multiple thin-walled cysts from a forty-three-year-old woman who had presented an acute inflammatory process of the right adnexa. The tumor was tensely elastic, of the size of a fist. Some of the cysts were filled with thick, green pus. The postoperative course was smooth until the fifth day, when the patient suddenly experienced tingling and a sense of coldness, first in the left and then in the right foot, which were followed directly by severe radiating pains in both legs and inability to move the toes. Examination of the heart revealed marked palpitation. After large doses of morphine and eucodel the pain subsided, but both legs presented a waxy pallor, felt cold, and could hardly be moved. There were no pulsations in the feet. The patient complained of a marked sense of anxiety, palpitation, general restlessness, and progressive numbness and tingling in the legs. Toward morning of the next day the manifestations subsided and subsequently there was general improvement with the complete disappearance of all of the symptoms. The wound healed without complications and there was no recurrence of the disturbances. On examination of the abdomen a month later after the patient's death, infiltration of the liver with carcinomatous nodules was found.

A diagnosis of arterial embolism due to acute cardiac decompensation was made. The author explains the appearance and disappearance of the symptoms on the basis of a spastic state of the arterial system. Emboli arising from the left heart are usually small and never as massive as those arising from veins. The size of an arterial embolus is of importance in determining which type of irritation, the tangential or the frontal, will be exerted upon the vessel. The tangential type occurs when the embolus first merely touches the wall of the vessel because of the progressive decrease in the size of the lumen, then rubs and presses upon it, and finally becomes wedged in. In this case there is a gradually increasing irritation which produces a vascular spasm at the site of the embolus. Frontal irritation occurs when an embolus from the left heart impinges with the full speed and strength of the blood stream against a point of bifurcation of an artery. This causes a greater internal trauma than the gradual tangential irritation, and the artery responds with a powerful spasm. The same conditions are presented in pulmonary embolism. The author therefore regards the immediate fatal cardiac arrest not as a reflex phenomenon, but as the result of a vascular spasm produced by the frontal impingement of a small embolus at the point of bifurcation of the pulmonary artery in the immediate neighbor-

hood of the heart. The larger the lumen of the artery, the greater are the frontal injury, the response of the vessel, and the violence of the spasm. The closer the embolism is to the heart, the greater the danger to the heart. Without doubt the irritability of the sympathetic nervous system differs from case to case. As the result of a spasm, an embolus may be arrested earlier than its size in relation to the lumen of the vessel would determine. If the spasm promptly subsides the liberation of the embolus may free an important branch of the vessels, restoring the circulation to a large part of the extremity. This explains the clinically important two-phase and three-phase embolisms.

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The needle is inserted with the patient in the standing position. The patient is then placed in the horizontal position, the limb is elevated, and a rubber constrictor is applied peripherally. The blood is then massaged out of the segment to be obliterated, and a second rubber constrictor is applied central to the needle. The sclerosing solution is then injected into the empty vein and compression is applied for at least ten minutes to assure intensive contact of the injected fluid with the intima of the vein. Between the constrictors an adhesive plastic bandage is applied, which encompasses only half of the limb and causes compression over the vein to be obliterated. After removal of the constrictors the patient may resume his activities. The first injection is made at the level of the knee or in the middle of the thigh. Further injections of the same limb are delayed until the reaction subsides. After all of the dilated veins have been treated an Unna boot is applied to the leg, and after varices on the thigh have been sclerosed an adhesive elastic bandage is applied half way round the thigh.

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SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Coller, F. A., and Maddock, W. G. Dehydration
Attendant on Surgical Operations *J Am M
Ass*, 1932, *xcix*, 875

This study was undertaken to evaluate the water losses of the body during operation and in the recovery period of four hours after operation. A study of the water balance necessitates the determination and calculation of the four sources of water to the organism and the three sources of excretion of water from it. The factors involved in water balance are as follows:

Intake	Output
1 Water of food	1 Water of urine
2 Water drunk	2 Water of stool
3 Water of oxidation.	3 Insensible water loss.
4 Preformed water	

INTAKE

1 The amount of water in ordinary solid food is comparatively high. The regular house diet of the University Hospital, Ann Arbor, Michigan, where these studies were made, yields about 1,000 c.cm. and the soft diet has a water content of about 500 c.cm. a day.

2 According to Atwater and Benedict, the average daily intake of fluids during light activity is about 1,267 c.cm. With increased work, it is about 2,000 c.cm.

3 Water is formed by the oxidation of foodstuffs in proportion to the total metabolism. With light activity the total amount so formed is about 300 gm.

4 The preformed water is the body water which is attached to the tissues and is set free when tissue is oxidized. The amount is too small to have an important bearing on the total water balance except in starvation.

OUTPUT

1 The amount of urine varies from 800 to 3,000 c.cm. daily.

2 Water loss in the feces is usually between 60 and 150 c.cm. daily.

3 The continuous insensible loss of water from the skin and lungs is always large. Increased metabolism or an uncomfortably high environmental temperature increase it.

The author describes the technical procedure for estimating the total fluid loss from all sources, including water lost by vomiting and blood loss.

The patients studied were divided into two groups. The first group were studied under conditions of operating room routine with the usual covering of a light blanket over the shoulders and thorax, another

over the legs, a cotton shirt, leggings, and surgical drapes. The second group were covered only by a shirt, leggings, and drapes.

The total fluid loss during the operation varies with the type of operation, the length of the operation, and a number of variable factors including temperature, anaesthesia, and the covering and condition of the patient.

In the recovery period of four hours after operation, the first group of patients were covered with a spread, a woolen blanket, a flannel blanket, and a gown. In the cases of the second group, in which the covering was reduced to a spread, a woolen blanket, a sheet, and a gown, there was a noticeable diminution of the water lost through the skin and lungs. The authors state that they can see no reason for the excessively heavy covering used during the recovery period.

The greater amount of fluid lost by avenues other than the kidneys makes it clear that the commonly accepted clinical method of estimating the water balance by comparing the fluid intake with the urinary output is so inaccurate as to be worthless to the patient for whom an accurate maintenance of the water balance is necessary. In the cases of certain patients undergoing operation it is important to maintain a proper supply of water. This can be done only by taking into account the water lost through the skin and lungs and as the result of vomiting and diarrhoea as well as that excreted by the kidneys.

The authors' investigation is summarized as follows:

1 In the cases of eighteen patients on whom operations were performed a study was made to determine the quantity of body fluid lost during the operation and during the first four hours after the operation.

2 During the operation fluids were lost by vomiting and hæmorrhage, and insensibly through the skin and lungs. The amount lost by vomiting was not important, but the amount lost by hæmorrhage varied with the type of operation from 8 to 1,272 gm. The insensible loss in addition to the visible sweating expressed in grams per square meter per hour is increased as high as nine times that of the basal state.

3 During the first four hours after the operation the principal water loss was through the lungs and skin. A comparison was made between two groups of patients with different bed clothing. The water loss of the patients with the lighter bed clothing was over 50 per cent less than that of the group placed in the routine "ether bed."

4 Factors increasing the insensible loss of water and sweating were the temperature of the environ-

the operative method, but surpasses it because it is an ambulatory treatment. Mishaps and failures are due to improper technique or the use of unsuitable solutions. The importance of emptying the vein as completely as possible is emphasized. The first injection should act as much as possible as an occluder like the Trendelenburg ligation. The author therefore believes it should be made into the lower third of the thigh. However some surgeons say that it may be made either above or below. With regard to the question as to whether a solution of sodium chloride or glucose should be used, Wymer says that when sodium chloride solution is injected the reaction is more intense, but there is danger of producing necrosis even when the injection is made most skillfully, and that when glucose solution is used more solution and a longer reaction time are required even in the case of veins well emptied of blood.

Large American collective statistics show that the mortality particularly the mortality from embolism, is considerably lower in cases treated by injection than in those treated by operation, being 0.2 per cent in the former and from 0.5 to 1 per cent in the latter. The incidence of recurrence is also believed to be lower in cases treated by injection than in those treated by operation. It is estimated at from 15 to 20 per cent for the former and from 20 to 40 per cent for the latter. However the figures for both methods vary enormously. Recurrences seem to be less frequent after the use of salt solution than after the use of glucose.

Occasionally, even when the most exact technique is used, the veins fail to become thrombosed. The author attributes this to the presence of an anastomosis with a deep vein between the two constrictors.

A questionnaire sent by Wymer to the surgical clinics of all German universities revealed that in only three clinics is surgical treatment used in most cases of varicose veins. In four clinics, surgical treatment and injection treatment are used about equally often, and in the rest the injection treatment is used in most cases. The injection treatment is being used today more frequently in all countries. Percutaneous injection with ligation of the saphenous vein and injection from the divided saphenous vein have not proved of value because they are associated with increased danger of embolism. SACROW (2)

Allen, K. V., and Adson, A. W.: Congenital Arterial Atresia and Ulcer of the Foot; Treatment by Sympathectomy. *Surg. Clin. North Am.* 1922, 17, 935.

A case of congenital arterial atresia involving the arteries of one leg is reported. Operation on the sympathetic nervous system, performed with the sole object of increasing the supply of blood, gave results which were distinctly favorable. The effect of the operation on the growth of the bones will be studied as the patient grows older.

Diminution of the arterial blood supply to the left leg was shown by absence of pulsations on palpation of the large arteries, absence of pulsations as shown by the recording sphygmomanometer, blanching with elevation and rubor with dependency of the limb, and incomplete response of the surface temperature to induced fever and to diathermy. All of these signs indicate occlusive arterial disease beyond a doubt. The decrease in the growth of the bones of the left leg appeared to be due directly to a decrease in the blood supply. The congenital origin of the condition was postulated on the presence of the lesion shortly after birth. The lesion appeared to be the result of atresia rather than of an inflammation such as would accompany thromboangiitis obliterans.

From the standpoint of therapeutics, the disease was one of arterial insufficiency. Treatment was therefore directed toward increasing the blood supply to the extremity.

The question which must be answered before operation in every case is whether the patient will be benefited by operation on the sympathetic system. In the case reported it was essential to know whether the blood supply could be increased by such a procedure. This information was supplied by the vasomotor studies.

The trouble in a case of this type is due entirely to deficient distribution of blood. An increased supply of blood is available, but is not utilized. Under such circumstances operation on the sympathetic system is performed merely to increase the blood supply to the parts. The increase is brought about, not by any effect on the atretic arteries, but by dilatation of smaller normal arteries which are capable of carrying more blood than they carry normally.

White, W A, Jr, and Cooney, E A A Non-Operative Treatment of Carbuncles *New England J Med*, 1932, CCVII, 398

White and Cooney review 500 cases of carbuncle treated in the Boston City Hospital In the 110 cases in which protein therapy was given the course of the condition was shorter than in cases treated by surgery except those of very small carbuncles The protein agent used was aolan, omnadin, or activin The dosages varied according to the response Overdosage seemed impossible Intramuscular injections were given into the gluteal or deltoid regions In the treatment of the largest carbuncles the average number of injections was 4 The authors favor intermittent applications of moist heat as long as inflammation is present.

The results in the cases reviewed indicate that non-specific protein therapy assists the natural course run by carbuncles and renders surgery unnecessary It checks the spread of the infection and relieves the pain in from two to eight hours

ELIZABETH CRANSTON

ANÆSTHESIA

Kirschner, M Spinal Zone Anæsthesia, Placed at Will and Dosage Individually Graded *Surg, Gynec & Obst*, 1932, LV, 316

While spinal anæsthesia is a valuable method, it is still frequently unsatisfactory The author has therefore devised a procedure by which the anæsthetic solution may be placed at will and maintained in a definite segment of the spinal cord and the dosage can be regulated according to the requirements of the particular case as in inhalation narcosis

With the patient's head low and buttocks elevated, a spinal puncture is done and a certain amount of cerebrospinal fluid is removed and replaced by an equal volume of air An anæsthetic solution lighter than, and not miscible with, the cerebrospinal fluid is then injected into the dural sac. The fluid will take its place between the spinal fluid and the air bubble and will remain there because, as it is lighter than the cerebrospinal fluid, it cannot spread cephalad, and as it is heavier than air, it cannot pass toward the sacrum Therefore zone anæsthesia is produced only in the spinal roots passing through this layer of anæsthetic solution To raise the level of anæsthesia more spinal fluid is removed and more air and anæsthetic are injected. For safety, the author places the upper limit of anæsthesia no higher than the intermamillary line To control the depth of anæsthesia, more anæsthetic can be added as needed.

The use of this method requires a double syringe having a barrel with a capacity of 50 c.cm for air and a barrel with a capacity of 10 c.cm for the anæsthetic solution The site of injection is never higher than the interspace between the first and second lumbar vertebra. During the induction of the anæsthesia and the operation and until the anæsthetic effect has worn off after the operation,

the patient must be kept in a lateral prone position with the head low at an inclination of 25 degrees to prevent sending the anæsthetic and air cranialward As a rule from 25 to 30 c.cm of air and from 2.5 to 3 c.cm of a $\frac{1}{8}$ per cent solution of percain are injected

This method has been used successfully in 700 cases In operations on the upper abdomen in which the sympathetic and vagus nerves require additional anæsthetization the author employs a high pressure local anæsthesia automaton With this apparatus, under a pressure of 3.5 atmospheres, a $\frac{1}{2}$ per cent novocain solution with a $\frac{1}{4}$ 1,000 percain-suprarenin solution is injected into the tissues in which these nerves run

GEORGE R. McAULIFF, M.D

Willinsky, A I The Clinical Significance of the Form and Functions of the Dorsal Roots in Spinal Anæsthesia *Am J Surg*, 1932, XLVII, 226

The author correlates some of the known facts of the anatomy and physiology of one division of the sensory pathways and on the basis of this evidence formulates a hypothesis to explain some of the physiological disturbances produced by spinal anæsthesia His interpretations are based entirely on clinical experience He believes that, contrary to the teachings of Labat, Babcock, and others, motor paralysis is not the natural consequence of spinal anæsthesia He attributes the apparent motor paralysis to the effect of the drug on the afferent side of the nervous system, and cites the well-known experiment of Starling in which loss of function in a limb was produced by sectioning all of the posterior roots supplying the limb proximal to the ganglion He cites also anatomical, physiological, pharmacological, and clinical evidence in support of this view He believes that spinal anæsthesia is a pure, posterior radicular block of variable intensity

LOUIS P. GAMBLE, M.D

SeEVERS, M H, and Waters, R M Respiratory and Circulatory Changes During Spinal Anæsthesia *J Am M Ass*, 1932, XCIX, 951

The usual cause of immediate death from spinal anæsthesia is respiratory paralysis This is the result of one or a combination of the following three mechanisms

- 1 Direct action on the medullary respiratory centers by diffusion of the drug to the fourth ventricle in concentrations sufficient to produce paralysis

- 2 Ascending block of the intercostal and phrenic nerves Paralysis from this cause is unquestionably preventable as it is due to (a) ignorance of, or inexperience with, the technical aspects of the procedure, or (b) unsuccessful attempts to produce a selective sensory nerve block of the neck and upper thoracic regions

- 3 Insufficient nutrient flow of blood through the central respiratory mechanism secondary to cardiovascular depression Since the integrity of

ment, principally that produced by blankets, struggling under anesthesia, and the anesthetic.

5. Under routine conditions, the total loss of water during the entire period average about 1 liter.

NORMAN C. BULLOCK, M.D.

Magyary, G. von: The Healing of Wounds Made by the Electrical Current (Ueber die Wundheilung nach elektrischen Operationen) *Arch. f. Klin. Chir.* 93, 2, 412, 737

The author studied wounds made by the electrical incision of the skin, connective tissue, fat, muscle, stomach, intestines, parenchymatous organs, and brain. Wound healing was observed macroscopically and microscopically for as long as two months.

Macroscopically the electrical wounds could be distinguished from ordinary incisions by the pale red margins which appeared as early as the third day. After the third day a fine yellowish streak could be seen between the wound margins. At this stage the margins were separated from each other. The necrotic streak did not disappear until the fourth or fifth day and the wound margins finally came into contact only after the eighth day.

Histologically the changes were characterized by the fact that primary healing occurred only when the coagulated portions had fallen away. Thus true primary wound healing, in the strict sense of the word, is not possible in electrically made wounds. In the skin the retardation of healing involves great danger of postoperative infection. In other tissues conditions are more favorable. Both the subcutaneous connective tissue and fatty tissue heal more quickly and perfectly than the skin. The wound margins are firmly united by the fourth or fifth day. In fatty tissue the eschar is particularly thin whereas in muscle incisions the conditions are practically as favorable as in wounds made by the surgical scalpel. In intestinal wounds the mucosa is partly cut through and partly coagulated. In the latter case epithelialization is delayed. Coagulation of the mucosa has the advantages of a hemostatic suture and makes it unnecessary to open the bowel. Thus, coagulation of the mucosa approaches the ideal of an aseptic bowel operation. In the parenchymatous organs an especially well-defined layer of necrosis is present beyond the zone of coagulation. In brain tissue the necrotic zone is particularly small, and healing is scarcely to be differentiated from that in wounds made with the scalpel. K. H. BAUER (2)

ANTISEPTIC SURGERY; TREATMENT OF WOUNDS AND INFECTIONS

Yosh, B. B.: Observations on the Treatment of Tetanus. *Arch. M. J.* 93, 2, 349.

The fatal effects of tetanus are due principally to: (1) poisoning of the vital centers causing respiratory and cardiac paralysis and failure, and (2) exhaustion due to continuous muscular spasms with superimposed seizures which are intensely aggravated by peripheral stimuli, even very light ones.

The treatment of the second factor requires quiet and darkness. Among the sedatives usually employed, especially in the beginning, are bromides and chloroform. These are given in large doses. When the spasms are very severe, morphine and atropin may be used. The author employs *Syzer somniferus* instead of chloroform as in several cases the latter has caused pulmonary edema. He does not give injections of carbolic acid and magnesium sulphate.

The local wound treatment is important. It is better to excise the wound area than to treat it with antiseptics. For cases in which excision is impossible, cauterization and the injection of oxygen into the wound are advocated. General supportive treatment is necessary. A liquid diet should be given and glucose administered by rectoclysis.

Antitoxin should be administered subcutaneously intramuscularly intravenously and intrathecally. Its intrathecal administration should be accomplished by lumbar puncture or puncture of the cisterna magna.

Early neutralization of all circulating toxin by injections of large doses of the antitoxin and maintenance of the proper concentration of antitoxin by repeated intravenous and intramuscular injections are necessary. Intrathecal administration of the antitoxin is of more benefit than the other methods. When the injection is made into the cisterna magna and supplemented by administration of the antitoxin through the skin, muscles, and veins, cure is usually sufficient. In the majority of cases some clinical improvement follows within twenty-four hours after puncture of the cisterna magna. The antitoxin appears to neutralize any toxin that is free in the cerebrospinal fluid at the time of the injection. The patient is rendered more comfortable and takes food more easily, and the lock jaw seems to improve more quickly. Reactions may follow the injection, but can be controlled by adequate doses of calcium by mouth or intravenously.

The amount of antitoxin necessary varies considerably in different cases. Patients have recovered after the administration of 40,000 units, whereas others have required more than 400,000 units. The quantity indicated depends on the severity of the primary infection, the incubation period, the site of the injury, the vitality of the patient, and other factors. The administration should be kept up as long as there are spasms and general rigidity. If it is stopped too early the spasms and rigidity may return.

The author describes the technique of puncture of the cisterna magna. The needle is introduced in the center of a line drawn from the tips of the mastoid processes. It is inserted slowly and never deeper than 6 cm. After 30 c.cm. of spinal fluid have been withdrawn an equal or slightly smaller amount of serum is introduced by gravity and the foot of the bed is elevated to keep the serum in contact with the higher parts of the cord for a longer period.

HOWARD A. McKEOWN, M.D.

White, W. A., Jr., and Cooney, E. A. A Non-Operative Treatment of Carbuncles *New England J. Med.*, 1932, cccv, 393

White and Cooney review 500 cases of carbuncle treated in the Boston City Hospital. In the 110 cases in which protein therapy was given the course of the condition was shorter than in cases treated by surgery except those of very small carbuncles. The protein agent used was aolan, omnadin, or activin. The dosages varied according to the response. Overdosage seemed impossible. Intramuscular injections were given into the gluteal or deltoid regions. In the treatment of the largest carbuncles the average number of injections was 4. The authors favor intermittent applications of moist heat as long as inflammation is present.

The results in the cases reviewed indicate that non-specific protein therapy assists the natural course run by carbuncles and renders surgery unnecessary. It checks the spread of the infection and relieves the pain in from two to eight hours.

ELIZABETH CRANSTON

ANÆSTHESIA

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LOUIS P. GAMBER, M.D.

SeEVERS, M. H., and WATERS, R. M. Respiratory and Circulatory Changes During Spinal Anæsthesia *J. Am. M. Ass.*, 1932, xcix, 951

The usual cause of immediate death from spinal anæsthesia is respiratory paralysis. This is the result of one or a combination of the following three mechanisms:

1. Direct action on the medullary respiratory centers by diffusion of the drug to the fourth ventricle in concentrations sufficient to produce paralysis.

2. Ascending block of the intercostal and phrenic nerves. Paralysis from this cause is unquestionably preventable as it is due to (a) ignorance of, or inexperience with, the technical aspects of the procedure, or (b) unsuccessful attempts to produce a selective sensory nerve block of the neck and upper thoracic regions.

3. Insufficient nutrient flow of blood through the central respiratory mechanism secondary to cardiovascular depression. Since the integrity of

the respiratory center depends on the maintenance of an adequate volume flow of sufficiently oxygenated blood, the obvious inference is that the latter mechanism is responsible for the majority of cases of respiratory failure.

Grave cardiovascular changes usually occur only in blocks that involve the chest. As the thorax is involved, two important factors enter into consideration: (1) additional paralysis of the vasoconstrictor fibers, and (2) intercostal nerve paralysis.

Little attention has been directed to the consequences of partial or complete loss of costal respiration when it is superimposed on a vascular incompetence involving two-thirds of the body.

The main thesis of this article is that the oxygen needs of the body are not adequately met because of a reduction of the volume flow of blood and a decrease in the gaseous exchange in the lungs proportional to the lowered thoracic excursion.

The authors report experiments which were carried out on thirty-seven large dogs. Three hours before the experiments the animals were anesthetized by the intravenous injection of 150 mgm of sodium barbital per kilogram of body weight. By this procedure an initial mean blood pressure of from 140 to 170 mm of mercury and good respiratory activity were assured. A few controls with ethylene and others with local infiltration for the operative procedure indicated that barbital modifies the end-result only slightly, provided sufficient time (three hours) is allowed after the injection before the experiment is begun. Removal of one spinous process or partial laminectomy was performed to insure intradural block.

The animal was then placed in a small Drinker respirator. This apparatus offers an ideal mechanical means of simulating normal costal respiration and in addition serves as a body plethysmograph to record respiration. Unobstructed respiration was assured by either a tracheal cannula or a closed endotracheal catheter.

The experimental procedure consisted in inducing a block with procain hydrochloride or sectioning the cord at various levels and making as many of the following determinations as were compatible with the technique involved.

1. Cardiovascular data: heart rate, pulse pressure, mean arterial pressure, right auricular and iliac venous pressure, and leg volume.

2. Respiration rate, amplitude, type, minute volume exchange, intra-abdominal and intrapleural pressures, alveolar oxygen and carbon dioxide, blood oxygen and carbon dioxide, and oxygen consumption.

3. Treatment: artificial respiration, oxygen, carbon dioxide, position, pressure on body and variouspressor and stimulant drugs.

It was found that as a rule dogs exhibit a tendency toward vagotonia, particularly if the block is high. The relatively slow heart noted clinically allows an increased diastolic filling and a relatively large stroke volume. Clinically a rapid heart during spinal

anesthesia is a danger signal and usually follows a decrease in the blood volume secondary to hemorrhage. It is serious and demands immediate replacement of the original circulating volume. It is readily produced in dogs by hemorrhage.

The fall in systolic pressure is directly proportional to the height of the block. The diastolic pressure is usually lowered as it is a measure of the peripheral resistance to the blood flow. A study of the venous pressure of dogs made directly by the introduction of a cannula through the right external jugular into the right auricle indicates that the venous pressure usually rises in proportion to the fall in the mean arterial pressure. A rise occurs also in the venous pressure in the iliac vein. However if the total blood volume is diminished by hemorrhage, a fall in the venous pressure in the right auricle is noted.

To be effective on the cardiac output the increased pressure in the right auricle must be transmitted from the right side of the heart through the capillaries of the lungs to the left side of the heart.

It is known that the venous pressure decreases in the right side of the heart in shock of hemato-genic origin, and it has been generally accepted that this observation is applicable to spinal anesthesia.

The origin of shock in spinal anesthesia is initially entirely neurogenic.

Experimentally the efficiency of respiration, thoracic excursion, and minute volume exchange decreases in blocks involving the thoracic region. The decrease is proportional to the height of the block. In general, the same alterations are noted clinically. In the low thoracic blocks, compensation by increased diaphragmatic activity may occur.

Further evidence of the decrease in pulmonary ventilation is furnished by studies of variations of intrapleural pressure. In the barbitallized dog the normal variations in the intrapleural pressure are from an inspiratory pressure of -5 to -13 cm. of water to an expiratory pressure of -4 to -3 cm. of water. With complete paralysis of costal respiration, these variations are reduced to -10 to -15 during inspiration and -8 to -10 during expiration.

The changes are probably due largely to increased diaphragmatic activity.

With regard to treatment the authors found that artificial respiration alone with the Drinker respirator and alternate positive and negative pressures will maintain the blood pressure near its original level after either a block completely paralyzing all respiratory activity or section of the cord at the corresponding level.

Exposure of the epithelium of the lungs to high concentrations of oxygen markedly augments the beneficial effects of artificial respiration.

Passive distention of the lungs with 100 per cent oxygen will maintain an adequate blood pressure in the absence of all respiratory movement for at least fifteen minutes.

The inhalation of carbon dioxide in 5 and 10 per cent concentrations in oxygen always resulted in

further lowering of the blood pressure in the animal with a low blood pressure accompanying thoracic paralysis

The authors conclude that even when peripheral resistance to blood flow has been reduced to the minimum by paralysis of all vasomotor nerves and skeletal muscle the cardiovascular system will unquestionably remain competent if the volume of adequately oxygenated blood retained within the vascular boundaries is sufficient to keep up an effective circulation to the vital organs. To combat the altered physiological conditions the following four methods are suggested

- 1 Maintenance of high percentages of oxygen in the alveoli or artificial respiration to increase the easily available oxygen of the blood

- 2 The use of drugs to effect an increase in peripheral resistance or an increase in the cardiac output. Ephedrin has received an extended clinical trial in spinal anesthesia, and evidence from both the clinic and the laboratory indicates that its continued use is warranted.

- 3 The use of position to favor gravitational circulation. It seems possible that the Trendelenburg position may be a factor in the etiology of post-operative pulmonary complications

- 4 Increasing the total volume of circulating blood. In dogs, injections of rather large amounts of a physiological solution of sodium chloride prior to

intradural block was quite effective in preventing a marked fall in the blood pressure. When spinal anesthesia is the method of choice for operation on a patient who is a poor risk, the authors use a slow intravenous drip and begin it immediately after the block has been induced.

The essentials for the use of spinal anesthesia with maximum safety are summarized as follows

- 1 Proper selection of risks, the deciding factors being absolute need for complete muscular relaxation and the ability of the patient to oxygenate his tissues normally. This precludes the routine use of spinal anesthesia in abdominal conditions

- 2 Limitation of the block to exclude major thoracic involvement

- 3 The combating of cardiovascular collapse by the judicious use of inhalations of oxygen throughout the surgical procedure, the administration of ephedrin to maintain the original blood pressure, a moderate Trendelenburg position when indicated, and the proper administration of fluid while the physiological integrity of the blood vessels and heart is still maintained.

- 4 Artificial respiration with undiluted oxygen in impending circulatory or respiratory failure

- 5 Postoperative hyperventilation with carbon dioxide periodically throughout the first twenty-four hours to expand atelectatic portions of the lungs

W N ROWLEY, M.D

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healthy rabbits Varying initial doses of the thorium compound were given and the rabbits examined at intervals thereafter In the cases of some of the animals small daily doses were given for a period of months The clinical course and the changing density of the liver and spleen to the roentgen rays were observed and the blood and urine examined The tissues were examined histologically To ascertain the presence or absence of thorium in malignant tissues, studies were made on two chickens with Rous sarcoma

The reports of other investigators along similar lines are cited briefly The technique used by the author and his findings in the liver, spleen, adrenals, bone marrow, lungs, ovaries, kidneys, blood, and urine are described in detail

A 25 per cent colloidal solution of thorium dioxide injected intravenously into the rabbits circulated for about five minutes in the colloidal state and then flocculated The flocculated particles were engulfed for the most part by the reticulo-endothelial cells of the liver, spleen, lymphatic tissue, and bone marrow and by the parenchymatous cells of the liver A moderate number were found lying free in the reticulum of the spleen and the lymph nodes A relatively small number were picked up by the adrenal glands and ovaries The thorium dioxide in a finely divided state in the liver and spleen absorbed many of the roentgen rays that usually penetrate the hepatic and splenic tissues and produced a shadow which permitted visualization of these organs The shadow cast by the bone marrow was obscured by the covering bone When large doses were used, the lymphatic glands were visualized In the adrenals and ovaries the amount of thorium dioxide was relatively so slight as to indicate that the dosage necessary for visualization of these organs would be tremendous and impractical

The presence of thorium dioxide in the tissues was innocuous During a period of four months no untoward reaction due to it was noted from doses up to 5 c cm per kilogram of body weight

No evidence of elimination of thorium dioxide from the spleen, bone marrow, lymphatic glands, or ovaries has been observed in a period of four months The cells of the adrenal gland which were laden with the thorium dioxide were apparently passed very slowly into the adrenal vein and probably later caught in the capillaries of the lungs The thorium dioxide of the liver cells gradually accumulated in the Kupffer cells, which migrated to the central vein area and then passed into the blood stream and through the right heart to the lungs, where they became lodged in the capillaries and eventually cast off in the bronchial mucus ADOLPH HARTUNG, M.D

Pinev, A., and Riach, J S The Treatment of Chronic Myeloid Leukæmia *Brit J Radiol*, 1932, 1, 393

All of the available evidence indicates that the bone marrow is the site of the primary pathological change in myeloid leukæmia

More important than the total white cell count is the differential count The higher the percentage of immature and abnormal leucocytes, the more serious the condition A graver sign is the presence in the blood of a considerable percentage of immature cells such as myeloblasts together with a fair number of completely mature cells but practically no intermediate forms

Irradiation treatment of leukæmia is undoubtedly the most effective, but should not be used until all of the non-irradiation methods have ceased to be beneficial

Of the drugs, arsenic, iron, and benzol have proved most valuable

X-ray treatments will ultimately fail Radium may then be employed or thorium-X may be used either intravenously or orally

Blood transfusions may be necessary to alleviate the anæmia and tide the patient over a crisis Splenectomy has been advocated, but the authors have had no experience with it

In chronic myeloid leukæmia irradiation may be given over the spleen or long bones or both According to the authors' experience it is better to give a preliminary irradiation of the long bones and follow this with irradiation of the spleen A greater fall in the number of abnormal cells will thus be produced than if the spleen is treated alone, although the total number of white cells may not be reduced any more than if treatment is confined to the spleen

It is dangerous to reduce the number of leucocytes too greatly if mature forms are falling to subnormal numbers So long as the reduction affects only abnormal leucocytes, it is quite safe to force the number to from 9,000 to 10,000 per cubic millimeter

The authors contend that it is necessary to observe the blood picture at very short intervals throughout the patient's life and initiate treatment in the early hæmatological relapses before clinical relapse manifests itself

CHARLES H HEACOCK, M.D

RADIUM

Cramer, W Experimental Observations on the Effect of Radium on a Precancerous Skin Area *Brit J Radiol*, 1932, 1, 618

Cramer reports experiments carried out on mice to determine the effect of radium upon so-called "precancerous" lesions of the skin The precancerous lesion was produced by painting the skin with tar in quantities sufficient to cause warts or tar papillomata, about 80 per cent of which would go on to malignant new growths It was hoped to learn whether radium is indicated or contra-indicated in precancerous lesions Some light was thrown upon the problem of radium therapy of new growths by the fact that various skin areas subjected to chronic irritation from tar painting developed malignant new growths in one portion and then in another portion This indicated that chronic irritation of an organ may result in the formation in various areas in that organ of new growths which are independent

PHYSICO-CHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Schnittker M A., Hodges, P C., and Whitacre, F E.: Roentgenological Evidence of Fetal Death. *Am J Roentgenol* 1932, XVII, 349.

After reviewing briefly the clinical signs of fetal death, discussing the gross pathological changes in the stillborn fetus, and outlining the theories of others regarding the roentgen findings in fetal death, the authors report their studies of roentgenograms made in 176 pregnancies, in 14 of which the fetus proved to be dead.

Although certain clinical signs and symptoms are recognized as of aid in the diagnosis of fetal death, no one of them is thoroughly reliable. The authors discuss the pathological changes which the macerated fetus undergoes, especially with the view of correlating them with such roentgen findings as have been claimed to be of value in the diagnosis.

They state that the detailed roentgen appearance of the skeleton of the living fetus is a function of fetal age, maternal build, and numerous technical factors. Significant alterations in the roentgenogram dependent upon pathological changes ushered in by fetal death may reasonably be expected and have been demonstrated. The 5 most important ones reported are (1) overlapping of the skull bones with asymmetry of the head, (2) lordosis of the cranial half of the spine (3) collapse of the thoracic cage, (4) disproportion between the size of the fetus and the duration of the pregnancy and (5) faintness of the shadow of the fetal skeleton due supposedly to decalcification.

Of the 14 dead fetuses studied by the authors, 11 presented 2 or more of these criteria of fetal death. The skull bones were overlapped in 3, the spine was angulated in 7, the thorax was collapsed in 2 (questionable), and disproportion and faintness of the shadow attributed to decalcification was present in 7. Of the 162 women who were delivered of a living child, 15 were in labor at the time the roentgen examination was made. Of the infants of the latter, overlapping of the skull bones was present in 4 and angulation of the spine in 5. In 7 no changes of any sort were noted. Of the 147 infants born alive who were examined when the women were not in labor, 9 showed skull changes which might have been interpreted as overlapping, but no other criteria, and 17 though presenting a normal skull, showed angulation of the spine.

Short abstracts of the histories of the 13 cases in which the child was born dead and of 3 illustrative cases from the group in which the child was born alive are given. The findings are subjected to critical consideration for the purpose of evaluating the different criteria. Disproportion is discussed at

length with particular reference to acceptable standards. The following conclusions are drawn:

1. Roentgenographic demonstration of overlapping of the skull bones of a fetus in utero is fairly reliable evidence that the fetus is dead provided the woman is not in labor and care has been taken to exclude pseudo overlapping due to the overlapping images of sutures and fontanelles.

2. Absence of overlapping means little. Conclusive evidence is lacking as to the exact relationship between the date of fetal death and the development of this sign, but it is generally agreed that some time must elapse. Faintness of the fetal shadow may mask overlapping, and hydrocephalus may prevent its development.

3. Spinal angulation and thoracic collapse appear to be of doubtful value as criteria of fetal death.

4. It is dangerous to diagnose decalcification in every instance of a faint or blurred fetal shadow because early in pregnancy this appearance may be due to failure to calcify rather than a loss of calcium previously present, and even when the skeleton is well calcified, excessive amniotic fluid, respiratory movements, and many technical factors may produce the same appearance. Moreover information is lacking as to the quantity of calcium in the human fetus, either macerated or normal, and some embryologists and clinicians insist that no decalcification occurs in maceration.

5. Anthropometric data published by Scammon and Galkin allow a reasonably accurate opinion as to the age of a fetus if its occipitofrontal diameter is known. Even with very coarse roentgenographic measurements of this diameter roentgen estimates of fetal age have agreed surprisingly well with the age estimated from the menstrual or delivery date in a considerable number of cases. Disproportion between ages thus calculated and the supposed duration of gestation constitutes a valuable criterion of fetal death, and accurate fetometry by stereo-roentgenographic methods ought to improve the validity of the diagnosis.

6. Absence of any one or all of the criteria does not exclude the possibility that the fetus is dead because they all depend upon the degree of maceration. Therefore it seems worth while to point out that the roentgenographic diagnosis of movement of a fetal part occurring during the roentgen examination constitutes conclusive evidence of fetal life.

ADOLPH HARTMAN, M.D.

Irwin, D. A. The Experimental Intravenous Administration of Colloidal Thorium Dioxide. *Canadian M J* 4:2 J. 931 XVII, 30.

Irwin reports the sequelae of the intravenous injection of colloidal thorium dioxide into twenty-five

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Greer, A. E. The Use of Fetal Spleen in Agranulocytosis. A Preliminary Report. *Texas State J. M.*, 1932, **xxviii**, 289

Certain observations point to a close interrelationship between the spleen and the bone marrow. The rôle of the spleen in fetal and postnatal hematopoiesis and the occurrence of myeloid metaplasia in the spleen in myelosis and in bone-marrow sclerosis suggest the possibility of a complementary relationship. In most leucopenic diseases the splenic pulp is considerably and uniformly affected.

In 1900 Carpenter reported that he had found splenic extract of value in the treatment of typhoid fever and malaria. After its use the leucocytes were increased.

Adam and Nicholls have called attention to the rarity with which septicæmic diseases produce abscesses in the spleen.

The author has used fetal calf spleen in the treatment of agranulocytic angina, but makes no claim as to specificity of this treatment. He reports three cases in detail. In the first case the administration of 120 gm. of the raw spleen in tomato juice daily was followed by a rise in the leucocytic count from 1,500 to 4,000. When the dose was increased to 180 gm. the leucocyte count rose to 9,000. A fourth case is also reported, but not in detail. There were two recoveries and two deaths. W. N. ROWLEY, M.D.

Benvenuti, B. A Clinicostatistical Contribution to the Prophylaxis and Cure of Surgical Tuberculosis in the Young. (Contributo clinicostatistico alla profilassi e alla cura della tubercolosi chirurgica nei giovani). *Arch. ital. di chir.*, 1932, **xxx**, 337.

The author undertook this statistical study because of the continued differences of opinion regarding the treatment indicated in so-called surgical tuberculosis. He reviewed the cases treated in the Ospizio Marino di Bocca d'Arno in the period from 1920 to 1930. These totalled 4,128. Prophylactic treatment was given in 3,164 and treatment for an already developed lesion in 964.

The value of heliotherapy and the methods employed in the institution mentioned are discussed. Benvenuti emphasizes that the general resistance of the body is of importance in the cure of surgical tuberculosis even when radical extirpation of the lesion is done. In the cases reviewed, surgical intervention was limited to minor procedures and care was taken not to disturb the natural barriers to the spread of the infection.

From 1,000 cured cases the author concludes that conservative treatment instituted at the proper

time and in a rational manner nearly always results in cure. He attributes failure to late diagnosis, late treatment, or incorrect methods used in the treatment. A. LOUIS ROSI, M.D.

Ajmar, F. A Clinical and Anatomicopathological Contribution on Spontaneous Juvenile Gangrene. (Contributo clinico ed anatomicopatologico alla conoscenza della gangrene spontanea giovanile). *Arch. ital. di chir.*, 1932, **xxxii**, 69.

The author reviews briefly the work of Winiwarter, Buerger, Oppel, and Goecke on the obliterative lesions of the blood vessels of the extremities, discusses the various theories regarding the etiology, and reports a case of the type that has led to much of the confusion.

The case reported was that of a man thirty-six years of age who was suffering from intermittent claudication. The clinical manifestations in this case were those common to most cases of obliteration of the vessels of the lower extremities. In spite of periarterial sympathectomy, amputation became necessary because of the development of gangrene. The amputated member was subjected to careful examination. The author gives a detailed description of sections taken at different levels in the vascular tree.

It was found that, whereas the arteries presented severe changes up to complete obliteration, the satellite veins showed only slight alterations which were not of a proliferative nature and, in the author's opinion, were secondary to the changes in the arteries. The superficial veins and the vasa vasorum were unchanged.

This case was unusual because the most advanced and oldest lesions were localized in the large artery of the extremity, the femoral artery, and this vessel was completely obliterated when the small vessels were only slightly changed. Especially the very small arteries, which in the ordinary case are attacked first, were normal or showed only inactivity changes. There were no changes in the perineurium or nerves.

The author believes that this case does not fit in with any definite group and that if a conclusion can be drawn from a single instance he would call the condition a systemic disease of the vessels, especially those of the extremities. A. LOUIS ROSI, M.D.

Adair, F. E., Pack, G. T., and Farrior, J. H. Lipomata. *Am. J. Cancer*, 1932, **xxv**, 1104.

Lipomata may occur anywhere within the body and may even cause death by growth and pressure in vital regions. Because of their widespread distribution, these tumors must always be considered in the differential diagnosis of somatic neoplasms. According to their location, lipomata may be classi-

of one another and not secondary lesions. Therefore it indicated that in cancer of the breast, for example, the whole breast should be removed even when only a portion of it is involved by the cancer.

One hundred and twenty mice were used in a series of experiments which were the same except that the area of skin painting was larger and the dose of radium smaller in one series than in the other. The mice were painted twice weekly for a limited period. The painting was stopped before warts appeared. Half of the surviving mice were irradiated over the tar-painted area and the others were used as controls. The mice were examined once a week. In the first series of experiments the area of skin measured about 0.5 cm. in diameter and 1 drop of tar was applied twice weekly for ten weeks. Of the 50 mice, 40 survived the treatment. Twenty of these were irradiated for a period of one hour with an applicator 10 mm. square containing 53 mgm. of radium element screened with 0.18 mm. of silver and at a distance of 0.5 cm. In the second series of experiments 1 sq. cm. of skin was painted for eight weeks. Eighty of 100 mice survived this treatment. Forty were treated with radium. The dose with the same technique was reduced one-half. One hour's exposure with the technique described caused a marked inflammatory reaction and in some instances

destruction of the epidermis. In the skin painted with tar exposure for half an hour produced about the same effect as exposure for an hour in the case of normal skin, and exposure for an hour produced a much more intense reaction.

The details as to the classification of the mice, the appearance of the tumors, the time of degeneration, and the results of the irradiation are discussed with tables, charts, and curves. The results and conclusions are summarized as follows:

The application of radium to a precancerous area delays and sometimes inhibits the development of malignancy. The effect was most marked when the precancerous lesion was in the early stages and the dosage of radium was relatively large. No evidence of breaking down of the resistance to malignancy as a result of the radium irradiation could be observed. It therefore appears that in clinical cases carefully given radium therapy is definitely indicated in precancerous conditions to prevent the development of cancer. When radium therapy is given to a fully developed malignant tumor in man, the possibility that other parts of the tissue or organ involved may be in a precancerous stage strongly indicates irradiation of the whole organ. In cases of breast carcinoma, for example, the entire gland should be irradiated.

A. JAMES LARKIN, M.D.

8 Sensory and trophic disturbances, e g, hyperæsthesia, pain, hypæsthesia, and atrophy of the skin, are associated with both types of tumor

9 Painful scars are frequent following the extirpation of lipomata and neurofibromata

10 Both varieties of tumor occur in young adults. Occasionally they are not noticed by the patient until the loss of subcutaneous fat with senescence renders them prominent. JOSEPH K. NARAT, M D

EXPERIMENTAL SURGERY

Milovanovic, M. An Experimental Contribution on Fat Embolism (Ein experimenteller Beitrag zur Frage der Fettembolie) *Med. Pregl.*, 1932, VII, 1

The author conducted a series of experiments on frogs, guinea pigs, and rabbits to determine whether, how, when, and to what extent fat embolism occurs after the subcutaneous injection of oil. Twenty per cent camphor oil, olive oil, and sesamum oil were injected subcutaneously at various places in the body, at various intervals, and in variable amounts. The animals which did not die from intoxication

after the injections were killed with chloroform. The organs were fixed in formalin and the tissue was cut with a frozen-section microtome and stained with hæmatoxylin-Sudan stain.

It was found that after subcutaneous injections of oil, fat emboli occur as a rule in the lungs. They are formed also in the heart, kidneys, liver, spleen, and brain, but not so regularly. They develop most frequently in the lungs, less frequently in the heart and liver, and still less frequently in the spleen and brain.

Although they occur often and in all forms (obstructing capillaries, precapillaries, arterioles, and arteries) after subcutaneous injections of oils, they occur much more frequently after intravenous injections of the same oils. They are more numerous and more extensive the larger the amount of oil injected and the longer the time elapsing between the injection and the death of the animal. When the same amount of oil is injected subcutaneously in different parts of the body at the same time or at intervals the number and distribution of the emboli are increased. PLIVERIĆ (Z)

sited as subcutaneous, intermuscular, and visceral. They occur frequently on the back of the neck, but seldom on the face, scalp or sternal region. They are common on the forearm and rare on the lower leg. The axilla are common sites, but the inguinal region is seldom involved.

Of the patients studied by the authors, 67 per cent had multiple lipomata. The largest number of tumors found in any subject was 160. Of 4 tumors which were recurrent, 3 recurred as simple lipomata after probably incomplete removal and 1 recurred as a liposarcoma. The largest tumor weighed 13 lb. and the second largest 4 lb.

Lipomata and neurofibromata have certain similarities. In their differentiation, transillumination has been of some aid as lipomata are translucent and neurofibromata are opaque to transmitted light.

The 15 lipomata of the breast studied by the authors presented special problems in diagnosis. Most of them were retroareolar and could not be palpated well, and their elasticity simulated the fluctuation of deep cysts of the breasts. Lipomata in the mammary fold caused dimpling by their attachment to the skin and thereby suggested breast gland carcinomata which occur frequently in this location. Lipomata in the axilla could not always be differentiated from aberrant breast tissue (poly mastia) or from sebaceous cysts of the large apocrine sweat glands.

The greater frequency of lipomata in females than in males has been explained by the greater tendency of females to accumulate fatty tissue. Another explanation is that women are more concerned than men with the cosmetic aspects of the tumors and therefore are more inclined to report to the clinic.

The average age of the 134 patients whose cases are reviewed by the authors was forty-one years. In 43 per cent the tumor appeared between the ages of forty and fifty years, an age at which fat usually begins to accumulate. The youngest patient was a boy of five months.

The authors suggest the following clinical-pathological classification of lipomata.

1. The simple solitary lipoma. This tumor usually occurs at a time of life when weight is increasing. It is soft and lobulated, and is located just beneath the integument, to which it is attached, producing the characteristic skin "tug."

2. Multiple lipomata. These tumors, which the authors believe to be neurofibromata, are not congenital, but develop during adolescence or later life. They are of a firmer texture than the solitary lipoma and are usually not adherent to skin. Because of their symmetrical distribution, they are commonly confused with multiple neurofibromata.

3. Congenital diffuse lipomatosis. This variety of lipoma is confined to one or two limbs and is usually associated with corresponding enlargement of the muscles and bones of the limb. It may co-exist with diffuse cavernous hemangiomas.

4. Degenerated lipomata. These tumors really do not need a separate classification. They repre-

sent the large or bulky lipomata which have undergone certain degenerative changes as the result of rapid growth or impairment of their blood supply. The xantholipomata and myxolipomata are well-known examples.

5. Liposarcomata. As some of the rapidly growing lipomata have shown malignant qualities, any very cellular lipoma with numerous cells containing only traces of fat should be regarded as malignant and treated as such, preferably by complete extirpation. Tumors of this type are rare.

The multiple symmetrical lipomata are seldom congenital. They usually make their recognizable appearance shortly after adolescence. The etiology of multiple symmetrical lipomatosis is obscure. Trauma and endocrine imbalance, particularly of the thyroid gland, have been suggested as provocative factors, but clinical and pathological studies do not support these theories. The authors believe that multiple lipomata are of neurogenic origin, although there is no histological evidence available to substantiate this opinion. The multiple tumors show definite gross morphological differences from the single lipomata in their dryness and light lemon-yellow tint. Their light color is attributed to their cellular character and the formation of only small quantities of fat. The older larger tumors become a deeper orange. As the tumors are so simply associated, their environment has not been studied microscopically as carefully as in the case of neurofibromatosis. In the latter condition the development of neurofibrosarcoma often furnishes abundant material for postmortem examination, whereas the multiple lipomata are rarely fatal. The association of lipomata with nerve fibers in the subcutaneous tissues has been observed, but it is possible that this relation is purely accidental.

The authors summarize the clinical resemblance between multiple lipomata and multiple neurofibromata as follows:

Both are of multicentric origin.

1. The symmetrical distribution of the tumors suggests a disturbance or defect of the central nervous system as a causative factor.

2. The multiple lipomata and neurofibromata have a similar regional localization, e.g. on the neck, scapula, popliteal space, arms, thighs, and lumbar region.

3. Both conditions may be classified as intracutaneous (frequently pedunculated) subcutaneous, fascial, and visceral. The multiple lipomata may appear in the lungs and liver where fat is normally absent.

4. Multiple lipomata and neurofibromata may co-exist in the same individual.

5. The fat, coffee-colored pigmented areas of skin which constitute one of the stigmata of von Recklinghausen's disease are often observed in multiple symmetrical lipomatosis.

6. There is an undisputed hereditary or familial influence on the genesis of both multiple lipomata and neurofibromata.

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INTERNATIONAL ABSTRACT OF SURGERY

FEBRUARY, 1933

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

EYE

Löfgren, S. Results of Glaucoma Operations (*Die Resultate der Glaukomoperationen*) *Acta ophthal*, 1932, x, 77, xi, 11

The author reports the results of 247 operations performed for primary glaucoma in 240 eyes. Operation was performed only when vision and the visual field were constantly decreasing and the pressure could not be reduced with miotics. The period of observation was at least a year. The result was considered good if the tension decreased to under 27 and the vision and the visual field remained the same as before operation or showed improvement.

Elliot's method was used 98 times on 95 eyes. Good primary results were obtained in 86 per cent of 57 cases of simple glaucoma, 73 per cent of 8 cases of acute glaucoma, and 76 per cent of 13 cases with chronic inflammation. Good end-results were obtained in only 25, 4, and 5 cases of these groups respectively.

Iridencleisis with meridian iridotomy by Holth's method in 31 cases of simple glaucoma resulted in injury of the lens in 2 cases. Good primary results were obtained in 23 (74 per cent) of the cases and good end-results in only 17 cases. In 4 of the latter a cataract developed a few years later. In 1 case of acute glaucoma an excellent result was obtained for longer than five years, while in another, the tension increased within fifteen days after the operation.

Incision by the method of Lundsgaard was performed in 11 cases of simple glaucoma. In 10 of these cases the glaucoma was primary. After one year the results remained good in only 6 cases.

Of 47 cases of acute glaucoma which were treated by iridectomy, good primary results were obtained in 38 (81 per cent). Of the 18 cases followed up, the end-results were good in 12. Iridectomy was done also in 19 cases of chronic inflammatory glaucoma. Of the 3 cases followed up, a good end-result was obtained in 1 and a subsequent increase in pressure occurred in 2.

Statistics on a few other procedures, including cyclodialysis, are given, but are omitted from this abstract because they are based on a very small number of cases.

In simple glaucoma the best end-results (cure in 62 per cent of the cases) were obtained with the Elliot operation, and the second best end-results (cure in 57 per cent of the cases) by iridencleisis. In acute glaucoma, the best end-results (cure in 67 per cent of the cases) were obtained with iridectomy. In chronic inflammatory glaucoma, the best end-results were obtained with the fistula-producing operations. If all of these operations are included with the operations performed at the same clinic in the period from 1907 to 1920, good end-results were obtained in 71 per cent of the cases in which sclerectomy was done, 68 per cent of those in which iridencleisis was performed, and 58 per cent of those treated by iridectomy. Restoration of the normal pressure, irrespective of the function, was obtained in 80, 76, and 58 per cent of these groups respectively. In the entire material there was only 1 case of late infection. If the pressure is low after iridectomy, vision and the visual field will remain good, whereas after fistula operations, even when the pressure becomes normal, deterioration of function often occurs either through cataract formation or progressive glaucomatous atrophy.

BEAUX (O)

Michail, D. Metastatic Carcinoma of the Orbit
Brit J Ophth, 1932, xvi, 537

The case reported was that of a woman thirty-two years of age who was operated upon for cancer of the right breast and three months later developed a metastatic tumor in the orbit of the right eye. The metastasis was associated with convergence and sursumvergence of the eye, limitation of motility on the temporal side, slight papillary oedema, and a decrease of visual acuity. Operation showed it to be in close contact with the floor of the orbital perosteum. It affected neither the perosteum nor other parts of this region, but maintained itself in the en-

capsulated cellulo-adipose tissue of the orbital cone under the right inferior rectus muscle.

After extirpation of the orbital tumor the eyeball began to regain approximately its normal position. It maintained a convergence of 10 degrees, but it recovered a motility of 30 degrees on the temporal side and visual acuity greatly improved.

Histological examination of the extirpated tumor showed it to be an encapsulated basocellular carcinoma with a diffuse massive infiltration on the posterior side and a trabecular or even glandular arrangement of cells on the anterior side. Eccentrically, the neoplasm had the appearance of a cancerous lymphangitis of the orbit.

It is generally found that almost all of the papillary alterations are associated with some visual disturbance due not to invasion of the optic nerve and their sheaths by the new growth, but to pressure strangulation from a well-developed metastasis in the interior of the muscle cone especially close to the apex of the orbit. Cancerous metastatic invasion of the orbit may take place also through the vascular circulation.

The author believes that in the case reported the ocular disturbances must have resulted from the mechanical obstacle which the tumor produced upon the contraction of the ocular musculature probably by the lymphangitis rather than by the infiltration of the musculature.

This case was one of those extremely rare cases in which the metastatic cancerous invasion occurred through the lymphatic tracts and involved not only the ocular musculature, but also the orbital cellulo-adipose tissue and especially the lymphatic tract.

The complete absence of an inflammatory reaction of the stroma in the orbital cellulo-adipose tissue and of necrotic centers and hemorrhages in the tumor mass indicated that the orbital metastasis was of recent origin.

LESLIE L. MCCOY, M.D.

KAR

Weiss, A.: The Value of Hematology to the Otolaryngologist. *Laryngoscope* 93, xii, 754.

The authors' findings in the study of slides to determine the blood changes in a selected group of otological conditions are summarized as follows:

1. The number of cells with star forms is not a satisfactory criterion of the urgency of operation in acute infections of the middle ear.

2. The leucocyte count and the count of cells with star forms are often higher in acute purulent otitis media than in acute mastoiditis.

3. In acute and chronic mastoiditis the blood picture shows no marked change. In recurrent mastoiditis caused by the streptococcus mucosus it shows definite changes.

4. Brain abscess and meningitis do not cause marked changes in the blood unless they are the result of a generalized infection.

5. In all cases of mastoiditis with venous complications there are marked changes in the blood.

6. Any rise in the percentage of the staffs after operation indicates the presence of a complication.

7. The complication may involve some part of the body other than the operative area.

The author's findings and conclusions in the use of the sedimentation test in a large series of otological conditions were as follows:

1. In all cases of chronic suppurative otitis media and chronic mastoiditis and in cases with labyrinthine symptoms the readings were normal.

2. The readings were normal also in cases of acute furunculosis of the external canal.

3. In acute suppurative otitis media and acute mastoiditis the readings were high (up to 30 per cent).

4. In cases of acute suppurative otitis media requiring no operation the rate dropped rapidly, but in cases with mastoid involvement it remained high until after operation.

5. The sedimentation rate rises somewhat after operation and drops very gradually (the drop often requiring from four to six weeks).

6. When the sedimentation test is made in series it will detect postoperative complications. It may be used also to determine the necessity for mastoidectomy in cases of acute suppurative otitis media.

JAMES C. BRADWELL, M.D.

Kerrison, P. D.: The Treatment of Otitic Labyrinthitis. A Plan for Investigation in Two Directions. I. Kubie. Theory of Forced Drainage. II. Direct Surgical Drainage. *Ann. Otol. Rhinol. & Laryngol.* 92, xii, 651.

The Kubie theory of forced drainage is based on the facts that cerebrospinal fluid is a dialysate from the capillaries and as it is in osmotic equilibrium with the blood its production and flow may be increased or diminished at will by diluting or increasing the concentration of the blood. Following the intravenous injection of hypotonic solutions the periaural and perivascular spaces are markedly distended. In inflammatory conditions of the central nervous system these spaces are lined with newly formed cells, many of which are lymphocytes. These spaces are the storage points of microorganisms which are washed out by the autogenous cleansing by dialysis. Kubie thinks that the intravenous injection of hypotonic solutions is the best method of promoting fluid formation.

With respect to surgical drainage, Kerrison says that to drain the two tentorial basins two series of vertical incisions should be made above and below the attachment of the tentorium. Dural incisions into the sigmoid sinus should drain this region and provide an indirect drainage pathway from the cisterna pontis. For drainage of the temporopontal field, which presents greater technical difficulties, incisions should be made through the line of the posterior ramus of the Sylvian fissure. Theoretically direct drainage combined with the forced drainage method of Kubie should be of benefit.

GROVER R. McATEER, M.D.

MOUTH

Mitchell, A., and MacKenzie, J. R. The Repair of Cleft Palate, with Notes on the Administration of Anæsthetics *Brit J Surg*, 1932, xx, 214

For over twenty years the authors have been very dissatisfied with the single-stage Langenbeck operation. During the past year, in which they have divided the procedure into two stages, they have obtained a successful result in nine out of ten cases.

In the first stage, flaps are raised through short lateral incisions and the attachment to the posterior margin of the bony palate is cut. The raw edges are painted with Whitehead's varnish. The time required for the operation is about ten minutes. No mention is made of the artery.

In the second stage, which is done from two to three weeks later if no signs of sepsis are present, the flaps are elevated, freshened, and sutured from before backward.

The first stage is done under ordinary ether anaesthesia and the second stage under colonic oil-ether anaesthesia. JAMES BARRETT BROWN, M.D.

McKie, D. E. C. Buccal Carcinoma *Am J Cancer*, 1932, xvi, 971

Proper treatment of buccal carcinomata requires a knowledge of the histology of such tumors. The mucosa is a stratified squamous epithelium. While the general histological plan is constant throughout, there are regional variations of a most distinctive nature.

It is believed that the basal cells are the parent cells of all of the superficial units. Broders states that they alone possess the power of reproduction.

The division of a basal cell occurs in such a manner that one of the daughter cells remains attached to the basement membrane while the other is removed from it. Downgrowth into the subepithelial tissues being prevented by the basement membrane, accommodation for the superficially placed daughter cell can be obtained only by elevation of the overlying cells. As the result of the tension exerted upon it, the superficially placed daughter cell assumes a spindle shape and lies with its long axis parallel with the surface.

The squamous cells are not held together by a stroma. Each cell is suspended in a fluid medium. Separation of the more superficial cells is prevented by intercellular bridges.

Certain parts of the buccal cavity are involved by malignant disease more frequently than others. Histological study suggests that, at least in some instances, this may be explained by special structural features. For example, in the posterior third of the dorsum of the tongue a completely cornified layer is totally absent and keratinization of cells is apparently seldom present. In the tonsillar region examination reveals an intimate relationship of the basal cells to the lymphoid tissue and irregularity of these cells. In places the two tissues appear to blend and to some extent lose their individual distinction.

The acanthomata have been classified by Cade according to their gross appearance into the papillary, nodular, ulcerative, and fissured types. Cade believes that the malignancy of the neoplasms may be inferred from their gross characteristics, and that the papillary types are relatively benign while the fissured types are of the most malignant nature.

Broders' classification of malignant tumors is based on the hypothesis that the less the differentiation shown by the cells the more malignant the tumor.

The conclusion has been reached that in squamous epithelium the basal cell alone is capable of reproduction while the cytological changes occurring in the superficial daughter cells are the result of degeneration and death. Therefore one may ask: Can the term "differentiation" be applied to a process of degeneration and death? "Differentiation" is the term applied to the process whereby a living cell of a more highly specialized function arises from a cell less peculiarly endowed.

This histogenesis of the buccal epithelial tumors under consideration is still a matter of dispute, but the author believes that basal cells are the originators of tumor growth.

The tumor cells are disseminated by

- 1 Local invasion
- 2 Fascial planes
- 3 Lymphatic spread. Of 286 patients treated for malignant disease of the buccal cavity with extension to the glands, only 8 (2.79 per cent) were reported as finally cured.

4 Blood spread.

5 Neural spread.

6 Salivary glands. A study of a large series of sections revealed only 3 cases of salivary gland metastasis. The author has confirmed the observations of Blair, who demonstrated subcapsular lymphoid tissue aggregations in the salivary glands.

7 Implantation. Implantation growths are rare. Leucoplakia is found most commonly as a sequel to syphilis, but is by no means always due to that condition.

Histologically there are 4 chief variations from the normal:

1 Subepithelial oedema, lymphocytic infiltration, and increased vascularity.

2 Basal-cell irregularity and mitotic activity.

3 An increase of the middle stratum of the epithelium with a degree of cellular oedema.

4. Alteration of the cornified layers.

The author regards the subepithelial changes as the primary reaction rather than as a secondary defensive change.

In approximately 20 per cent of cases of carcinoma of the mouth the carcinoma is preceded by leucoplakia.

JAMES BARRETT BROWN, M.D.

Fraser, J. Carcinoma of the Mouth and Tongue *Ann Surg.*, 1932, xcvi, 488

Carcinoma of the mouth occurs more frequently in some areas of the mouth than in others. In the

anterior two-thirds of the tongue its incidence is 43 per cent in the palatoglossal sulcus, 30 per cent in the gingivoglossal sulcus, 11 per cent and in the floor of the mouth, 10 per cent. The author reports studies undertaken to determine whether in the areas affected especially often there are structural peculiarities which might in some measure explain the greater incidence of the disease in these parts.

He found that the anterior two-thirds of the tongue show no outstanding variation of structure, the picture in this area being that characteristic of buccal epithelium in general. In the posterior third, the presence of lymphoid tissue probably affords some resistance to malignant epithelial change.

In the palatoglossal area there are peculiarities of structure which may account for the high incidence of cancer. Here there are certain indistinct vertical ridges of epithelium (papilla foliata) the remnants of a structure which in man is an atavism with large numbers of epithelial cells having no definite function. The fact that collections of these cells may be almost entirely cut off from communication with the surface probably increases the danger.

In the floor of the mouth carcinoma occurs most frequently around the openings of the salivary ducts. The presence of junctional epithelium at these sites may be a factor favoring malignancy.

While structural peculiarities may play a part in determining the sites of carcinoma in the mouth, there are other influences which act as the stimulus to the production of the erratic cell growth constituting malignancy.

First among the latter is age. The liability to cancer appears to increase with age until the maximum incidence of the condition is reached between the seventy-fifth and eighty-fifth years. The influence of age is probably due to an increase in cell instability causing the cells to undergo malignant changes under the influence of stimuli which, when they were younger, would not have effected them.

Another factor of importance in the development of cancer of the mouth is irritation due to injury of the buccal mucous membrane. The fact that cancer of the mouth is 8 times more frequent in males than in females may be explained by injury of the buccal mucous membrane by tobacco and alcohol. Tobacco itself does not produce the disease, but in conjunction with one or more irritants of a general or local nature, may be a factor in inducing the cell changes resulting in malignancy. Alcohol, and particularly raw spirit, is probably an important factor in the production of cancer.

Syphilis has long been recognized as being in some way intimately related to the development of carcinoma of the mouth. In determining its relation to the site of carcinoma in the mouth it is found that in cases of carcinoma of the tongue as a whole the incidence of syphilis is 42.3 per cent, whereas in cases of carcinoma of the dorsum of the tongue it is 78.3 per cent. While it is possible that the vascular changes of a syphilitic infection are most marked in the dorsum of the tongue than in other sites, there is

evidence that the association of the two conditions is related to leucoplakia. Leucoplakia of the dorsum of the tongue is one of the most frequent results of syphilis and in 90 per cent of the cases of carcinoma of the dorsum of the tongue the malignancy was preceded by leucoplakia. A close relationship between carcinoma of the dorsum of the tongue and leucoplakia thus seems to be established.

The condition most constantly associated with carcinoma of the mouth and, in the author's opinion, an important factor in its development is oral infection.

Local irritants of any type influence the production of carcinoma and are of particular importance in this respect in the sensitive epithelium of the mouth.

In some individuals there is a liability to what may be termed epithelial instability a tendency for a malignant change corrected at one point to reappear later at other sites in the mouth. Of the author's series of 105 cases of carcinoma of the mouth, this tendency was found in 5. In 4 of the 5 cases the time intervals between the occurrence of the lesions ranged from eight to fifteen years.

The cell which invades the subepithelial area belongs to the cubical and basement-cell group.

Different types of invasion may occur in the same tumor, but as a rule the uniformity is such that the type of cell invasion can often be surmised from the clinical appearance of the neoplasm.

Under what may be considered characteristic circumstances the cellular changes pass on to cell-seed formation and the metamorphosis is a reproduction of the process in normal epithelium occurring under altered conditions.

Broders' grouping of malignant tumors is of value for descriptive purposes and is based on a conception which has a certain scientific merit, but it is of most value as an index of the clinical state, the danger of malignancy being greatest in tumors with cells of the undifferentiated type.

There are certain tumors arising from buccal epithelium which cannot be included in the acanthoma group and show variations so great that it is impossible to include them in any single collective grouping. Tumors of this type seen by the author are:

1. Spindle-celled epitheliomata. In these tumors the cells present a most curious histiform appearance suggesting fibrosarcoma.

2. Mucoid epitheliomata.

3. Alveolar epitheliomata.

4. Adamantinoid epitheliomata.

5. Mixed tumors of salivary gland origin.

6. Endotheliomata.

7. Melanomata.

8. Lympho-epitheliomata. A bulky rapidly growing tumor of the right tonsil was found to consist of basal cells combined with numbers of large cells of the lymphocyte type.

The tumor formation extends by certain recognized modes and channels—local invasion, particu-

larly along fascial planes, lymphatic spread, blood spread, and infiltration along the perineural spaces. Blood dissemination is not a serious risk because the epithelial malignant cell is apparently unable to exist for any length of time in the blood stream. This explains the rarity of visceral metastasis of buccal carcinoma. Because of perineural spread, referred nerve pain is one of the most distressing features of an established buccal carcinoma.

The general term "surgical treatment" may be applied to any of the following accepted methods:

1. Excision of the tumor with the scalpel or by diathermy, together with radical dissection of the related lymphatic field.

2. Radium or X-ray treatment of the local area combined with radical dissection of the lymphatic field.

3. Radium or X-ray treatment of both the local and the lymphatic areas.

Radical excision consists in removal of the affected area by a wide excision, usually with the scalpel but sometimes by diathermy, and radical dissection of the related gland groups done coincidentally with, before, or after the main operation.

In order to obtain an accurate idea of the prognosis it is necessary to divide the cases into 2 major groups: (1) those in which no glandular involvement is evident on clinical or microscopic examination, and (2) those in which glandular involvement is found at the time of operation.

Of 68 cases in which the author performed the radical operation, a cure lasting for two years or longer was obtained in 23.5 per cent and death resulted in 29.4 per cent. Of the cases in this group in which there was no glandular involvement, a cure was obtained in 35.7 per cent and death resulted in 9 per cent, whereas of those with involvement of the glands, a cure was obtained in 3.8 per cent and death resulted in 42 per cent.

The mortality is lowest when the operation is performed in 2 stages, the glandular dissection being done either before or after the tumor excision. In 24 cases in which the operation was performed in 2 stages, the mortality was 8.3 per cent, whereas in cases in which it was performed in 1 stage the mortality was 52.6 per cent.

The incidence of recurrence is lowest after the 1-stage or combined operation.

The author divides his experience with radium therapy into 3 periods—the early period, the middle period, and the present time. His results have improved. He now uses a moderate dosage—from 100 to 150 mgm per cubic centimeter of tumor tissue—applied, when possible by surface application or, if this is impossible, by the interstitial method.

Traser believes that the lymphatic field is best dealt with by a radical block dissection.

In conclusion he outlines the procedure now used by him in early cases of buccal carcinoma. In the preliminary treatment all areas of infection within the mouth are cleared up and when the interior of the mouth is sufficiently clean a radium-carrying

plate is applied so that the tumor area and a surrounding area of $\frac{1}{2}$ in. are subjected to the influence of the radium. The healthy portions of the mouth are protected by means of a lead or a platinum screen. If the difficulties of surface application prove insuperable, interstitial irradiation is used. After the surface lesion has healed, the glandular tissue on the affected side is dissected. Following such treatment the patient is told to report at monthly intervals for a period of six months and then at intervals of three months for a period of two years.

JAMES BARRETT BROWN, M.D.

NECK

Duncan, W. S. The Relationship of Thyroid Disease to Chronic Non-Specific Arthritis. *J. Am. M. Ass.*, 1932, **CXIX**, 1239.

Both hypothyroid and hyperthyroid states, despite their contrasting clinical pictures, are associated with arthritic syndromes. The arthritis of hypothyroidism belongs to the group of endocrine or hypoglandular joint diseases. It is associated with other manifestations of thyroid insufficiency and characterized by hypertrophic changes in the joints, particularly those of the lower extremities. Striking amelioration of symptoms and interruption of progressive deformity follows the administration of thyroid extract. Thyroid medication is indicated in all cases of polyarthritis in which the basal metabolic rate is lower than normal.

In hyperthyroidism a pre-existing arthritis may be aggravated by the onset of the toxic thyroid state or arthritis may develop during the course of exophthalmic goiter. The joints most frequently affected are those of the upper extremities. The capsular and periarthritic changes are similar to those of atrophic polyarthritis. The joint pain is severe and does not respond to the usual forms of arthritic therapy. If the condition is untreated, chronic progressive polyarthritis with characteristic contractures ensues. Adequate surgical therapy directed toward the hyperthyroidism results in astonishing relief of the pain and disability and sometimes in the disappearance of even gross deformities. If therapy is delayed too long, irremediable joint changes result.

LEO M. ZIMMERMAN, M.D.

Parcellier. The Indications for Operation and the Value of Surgical Treatment in Basedow's Disease (Indications opératoires et valeur thérapeutique du traitement chirurgical dans la maladie de Basedow). *J. de méd. de Bordeaux*, 1932, **CIX**, 607.

Good results are claimed for medical, surgical, and roentgen treatment of Basedow's disease. Aside from symptomatic measures, medical treatment consists of rest and the administration of iodine. This usually results in striking immediate improvement and lowering of the basal metabolic rate. Occasionally it is followed by permanent and definite recovery, but as a rule the improvement is only transitory. In some cases iodine fails to affect the course

of the disease, and occasionally it even aggravates the condition.

When X-ray irradiation is beneficial the improvement occurs slowly so that at least six months must be allowed for the treatment and, as after medical treatment, is usually transitory. In at least 30 per cent of the cases no improvement occurs, and in some cases the irradiation renders the condition worse, even precipitating acute crises. If surgery becomes necessary after X-ray therapy the operation is more difficult and dangerous because of adhesions which obliterate normal cleavage planes and because of increased friability of the vessels which interferes with hemostasis.

The surgical treatment of Basedow's disease may be directed toward the sympathetic nervous system or the thyroid gland, but surgery directed to the sympathetic system has been largely abandoned. Operations on the thyroid gland have become narrowed down to subtotal thyroidectomy in one or more stages. Subtotal thyroidectomy results in marked amelioration of the symptoms and restoration of the basal metabolic rate to normal. The pulse rate is slowed by the operation, but remains unstable. This treatment alone yields permanent results. Its disadvantages are the inevitable mortality and the more or less disfiguring scar.

In mild cases of hyperthyroidism medical treatment should be given a trial. If the basal metabolic rate falls to within ± 15 , the patient should not be operated upon but should be kept under observation. If recrudescence occurs or if the patient does not respond to iodine therapy, immediate thyroidectomy should be done. In early cases the mortality is practically nil and recovery is complete.

In cases of moderate severity (with basal metabolic rates between ± 30 and ± 60) medical treatment may be tried, but must not be continued too long. As soon as it becomes evident that medical treatment alone is inadequate, irradiation or surgery must be employed. While the author favors surgery he allows the patient to choose between operation and irradiation. If X-ray treatment fails, surgery becomes the only alternative. In most cases of this type operation can be done in one stage, but in some of them two or more stages will assure greater safety.

In severe cases or those in which medical treatment has been continued too long, surgery alone is advisable and the thyroidectomy must be done in one or more stages.

In the acute, fulminant forms of the disease all types of therapy may be of no avail.

LEO M. ZIMMERMAN, M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Dandy, W. E. The Treatment of Trigeminal Neuralgia by the Cerebellar Route *Ann Surg*, 1932, xcvi, 787

The author reports on 250 cases of trigeminal neuralgia in which he has operated by the cerebellar route since 1925. In the last 150 cases there were no deaths or postoperative complications. Dandy describes the operation and lists the advantages of the cerebellar route as compared with the temporal route as follows:

- 1 The absence of postoperative keratitis
- 2 Avoidance of injury to the motor root of the trigeminal nerve
- 3 Avoidance of injury to the facial nerve
- 4 The possibility of discovering in the posterior fossa the cause of the condition, such as a tumor or arterial loops, which would be missed by the use of the temporal route
- 5 The facility of operating on bilateral trigeminal neuralgia in 1 stage. When the temporal route is used, 2 operations are necessary
- 6 The ease of re-operating in cases of recurrence
- 7 The practicability of dividing, in the same approach, the eighth and ninth nerves when this is necessary

DAVID J. IMPASTATO, M.D.

Moore, R. F. Ocular Manifestations of Lesions of the Fifth Nerve *Bril M J*, 1932, ii, 783

The gasserian ganglion corresponds to the dorsal root ganglia of the spinal nerves and may be involved in pathological processes common to the latter. The fifth cranial nerve may be involved by the spread of inflammation from middle ear disease, basal meningitis, tumor of the cerebellopontine angle, or inflammatory or neoplastic processes anywhere in its peripheral course.

Occasionally herpes zoster, for which a definite etiological agent is unknown, involves the fifth nerve. One of the usual symptoms is severe headache with occasional vomiting from involvement of the meningeal branch of the first division. Common complications are corneal affections, iridodochitis, ocular palsies, and optic atrophy. The eye is seldom involved unless the nasociliary nerve is affected.

In corneal involvement, the cornea becomes the site of patchy interstitial inflammation from which permanent opacities often result. Occasionally the surface epithelium is raised to form vesicles and small ulcers result. Permanent impairment of the sensitivity of the cornea is common and occasionally so complete as to lead to neuroparalytic keratitis.

With regard to corneal ulceration following loss of sensation in the cornea the author says that anæ-

sthesia of the cornea alone will not produce ulceration, for if the cornea is completely protected by a tarsorrhaphy (suturing together of the lids) ulceration will not develop, and when protection is afforded by tarsorrhaphy ulcers heal quickly. Moreover, ulcers rarely develop in the area of complete corneal anæsthesia following corneal section for cataract but will form under the influence of exposure without loss of sensitivity. Persons who lie with the lids partly open so that the lower part of the cornea is exposed, persons with exophthalmic goiter whose eyes are so prominent that they cannot be closed, and animals with exceptionally protuberant eyes, such as Pekinese dogs, are prone to develop corneal ulceration.

The author believes that the formation of ulcers is favored by decreased secretion of tears, decreased blinking, and loss of pain sensation to small noxious agents. He concludes that tarsorrhaphy should always be done when the gasserian ganglion is destroyed for tic douloureux, and the lids left together for a period of from four to six months.

Recently Moore has seen several cases in which corneal ulcers followed an old mustard-gas burn of the cornea. From the appearance and reaction of the lesions he concludes that such ulcers should be considered trophic lesions. JOHN W. ERTON, M.D.

Howell, C. M. H. Ocular Manifestations of Lesions of the Fifth Nerve *Bril M J*, 1932, ii, 786

The author has never noted any abnormality of ocular movements from complete loss of sensation in the first division of the fifth nerve and believes that the chief danger of this condition is ulceration of the cornea of the desensitized eye. He attempts to answer the following questions:

- 1 Is the occurrence of corneal ulceration dependent upon the part of the afferent path affected?
- 2 What may be done to prevent ulceration and how should it be treated?
- 3 What are the ultimate results of such ulceration likely to be?

In answering the first question he states that when a lesion affects the first afferent neurone in its extramedullary portion, 'spontaneous corneal ulcer' is likely to occur. He has never seen such an ulcer develop from a supranuclear or intramedullary lesion. Corneal ulcer is more likely to be produced by acute injury, such as trauma from the surgeon's hands, acute inflammation, as in herpes affecting the gasserian ganglion, and damage caused by the injection of alcohol than by a more slowly destructive process such as that associated with tumors. Corneal ulcers resulting from anæsthesia usually develop within the first fortnight. Thereafter the risk steadily diminishes. If the patient escapes

of the disease, and occasionally it even aggravates the condition.

When X-ray irradiation is beneficial the improvement occurs slowly so that at least six months must be allowed for the treatment and, as after medical treatment, is usually transitory. In at least 30 per cent of the cases no improvement occurs, and in some cases the irradiation renders the condition worse, even precipitating acute crises. If surgery becomes necessary after X-ray therapy the operation is more difficult and dangerous because of adhesions which obliterate normal cleavage planes and because of increased friability of the vessels which interfere with hemostasis.

The surgical treatment of Basedow's disease may be directed toward the sympathetic nervous system or the thyroid gland, but surgery directed to the sympathetic system has been largely abandoned. Operations on the thyroid gland have become narrowed down to subtotal thyroidectomy in one or more stages. Subtotal thyroidectomy results in marked amelioration of the symptoms and restoration of the basal metabolic rate to normal. The pulse rate is slowed by the operation, but remains unstable. This treatment alone yields permanent results. Its disadvantages are the inevitable mortality and the more or less disfiguring scar

In mild cases of hyperthyroidism medical treatment should be given a trial. If the basal metabolic rate falls to within ± 15 , the patient should not be operated upon but should be kept under observation. If recrudescence occurs or if the patient does not respond to iodine therapy, immediate thyroidectomy should be done. In early cases the mortality is practically nil and recovery is complete.

In cases of moderate severity (with basal metabolic rates between ± 30 and ± 60) medical treatment may be tried, but must not be continued too long. As soon as it becomes evident that medical treatment alone is inadequate, irradiation or surgery must be employed. While the author favors surgery he allows the patient to choose between operation and irradiation. If X-ray treatment fails, surgery becomes the only alternative. In most cases of the type operation can be done in one stage, but in some of them two or more stages will assure greater safety.

In severe cases or those in which medical treatment has been continued too long, surgery alone is advisable and the thyroidectomy must be done in one or more steps.

In the acute, fulminant forms of the disease all types of therapy may be of no avail.

LEO M. ZUCKERMAN, M.D.

MISCELLANEOUS

Davis, L., Pollock, L. J., and Stone, T. T. Visceral Pain *Surg, Gynec & Obst*, 1932, 14, 418

Following a review of the hypotheses regarding visceral pain which have been advanced up to the present time and of the anatomical and experimental evidence cited in support of them, the authors discuss the transmission and reference of the pain produced by distention of the gall bladder. On distending the gall bladders of cats they found

- 1 Abolition of respiratory response and pain following section of the right splanchnic nerve
- 2 Persistence of respiratory response and pain after section of the left splanchnic nerve.
- 3 Persistence of pain following section of all the thoracic and the first lumbar anterior roots
- 4 Abolition of respiratory response and pain following section of a sufficient number of posterior roots
- 5 Persistence of the respiratory response and pain following severance of the right intercostal nerves close to the rami communicantes
- 6 Persistence of pain after section of the right intercostal nerves with successive section of the

phrenic nerve, brachial plexus, cervical sympathetic trunk, stellate ganglion, and vagus. The authors believe this finding indicates that the visceral afferent impulses traveled by way of the splanchnic nerve alone.

It was noted, however, that the character of the response after section of the intercostal nerves was modified in that greater distention of the gall bladder was necessary and the struggling was relatively less than in the otherwise normal animal. The authors therefore believe that it is necessary to devise another experiment for the study of referred pain in cats.

After the injection of 0.1 mgm. of nicotine per kilogram of body weight there was abolition of response to distention of the gall bladder, but persistence of response to nociceptive stimuli to the foot. After the elapse of a variable length of time, respiratory responses and pain were again elicited by distention of the gall bladder.

The authors believe that when it is possible to conceive a preparation in which only referred pain may be produced, continued studies with nicotine may serve further to elucidate this difficult problem.

HALE HAVEN, M.D.

ulceration for a month, the danger of the development of ulcers later is slight. In the irradiation of tumors it must be borne in mind that the damped eye endures X-ray irradiation very poorly.

To prevent corneal ulceration the author keeps the upper lid strapped down for a couple of weeks. At the end of that time he allows the lids to be open, but has the patient wear an eyeshield. At first the eyeshield is worn indoors as well as outdoors and then outdoors only. Finally it is removed altogether. With the first sign of trouble—pendant injection of the conjunctival vessels—Howell sutures the lids together and leaves them sutured for from four to six months. When this is done any ulcers which may have formed—and ulcers form very quickly—will usually be very superficial and will generally heal without leaving a corneal opacity.

JOSEPH W. EYER, M.D.

SPINAL CORD AND ITS COVERINGS

Schaller, W. F., Roberts, A. M., and Stadtherr, L. F.: Acute Myelitis (Myelomalacia): Syndrome of Occlusion of the Anterior Spinal Artery at the Fifth Cervical Cord Segment. *J. Am. M. Ass.* 9:12, 1912, 572.

Two cases of acute myelitis illustrating the syndrome of occlusion of the anterior spinal artery at the fifth cervical cord are reported.

The first case was that of a woman forty-two years of age who noted slight numbness and weakness of her hands when she arose in the morning and within an hour developed complete flaccid paralysis below the neck. Later the paralysis became spastic and there were aching pains in the back and along the course of the sciatic nerves. Examination by the authors five months later revealed marked weakness, atrophy, and flaccidity of all the muscles of the upper extremities. The muscles of the trunk and lower extremities were spastic and did not respond to volition. Joint, muscle, vibratory and cutaneous tactile sensibility were preserved throughout. Pain and temperature sensibility were impaired between the fifth cervical and the fourth thoracic segments, and were absent below that level.

The second case was that of a man forty-two years of age who awoke one morning with a feeling of stiffness in his arms, legs, and trunk and was unable to move any part of his body except his head and neck. Three and a half months later when he was examined by the authors, there was generalized weakness of the muscles of the extremities with an "obstetrical" type of hand. Cutaneous sensibility to pain and temperature was diminished below the clavicles. Joint, muscle, vibratory and tactile sensibility were intact. Three months after the onset of the illness the patient was able to get around quite well, but left insecure when standing. His fingers were so stiff he was unable to perform fine movements.

The authors discuss the blood supply of the spinal cord and call attention to the dual blood supply of

the posterior two-thirds of the cord and the relative avascularity of the anterior one-third. The posterior portion of the cord is apparently well protected against ischemia. Therefore deep sensibility and touch are generally preserved, whereas pain and temperature sense, which are carried along the tracts that cross through the commissures and ascend in the anterolateral part of the cord, are often affected. The acute myelitis is produced by vascular occlusion which in many instances occurs in vessels already damaged by syphilis or arteriosclerosis. In both of the authors' cases the Wassermann reaction was negative.

Acute myelitis is not a progressive disease. It reaches its height within a few hours and then gradually improves.

ROBERT ZOLLINGER, M.D.

PERIPHERAL NERVES

Pollock, L. J., and Davis, L.: Peripheral Nerve Injuries. Tenth installment. *Am. J. Surg.* 1912, xviii, 151.

In continuing their discussion of brachial plexus injuries the authors state that the sensory loss associated with such lesions is a less reliable index of the extent and severity of the injury than the motor loss. In describing the signs of recovery in lesions of the brachial plexus they state that while recovery is often only partial, it may become complete in from a few months to two years. They report cases of brachial plexus injury with concomitant injury to the spinal cord, and describe in detail the anatomy of the brachial plexus and its branches.

The mechanism of indirect injuries to the plexus is considered to be the same in adults and infants. In infants such injuries appear as birth palsy.

The surgical treatment of brachial plexus injuries is seriously complicated by possible lesions of associated structures (hemorrhage beneath the cervical fascia, combined lesions of the axillary artery). In cases of severe plexus lesions surgical treatment is disappointing because of the location of the lesion within or near the intervertebral foramina which makes it surgically unapproachable. In many of the less severe lesions a surprisingly good functional result is yielded by careful neurolysis. The technical steps in operations on the brachial plexus are described in detail.

The authors next discuss the mechanism, signs, symptoms, and surgery of lesions of the sciatic nerve. As in the case of the median nerve, some injuries of the sciatic nerve result in a painful type of paralysis. However the injuries are painful only when there is injury to the fibers of the tibial nerve. With regard to the surgery of the sciatic nerve—the authors state that, because of the division of this nerve into tibial and peroneal components and the possibility of injury to one without injury of the other great care is necessary in determining the extent of the injury.

In conclusion the authors discuss the signs, symptoms, and surgery of lesions of the peroneal nerve.

HALE HAYDEN, M.D.

chronic abscess it is an excellent palliative procedure as it assures drainage and gives the patient a sense of well being. In bronchiectasis its immediate result is always good, but recurrences are frequent. In pulmonary gangrene it is of no avail.

FRANK B. BERRY, M.D.

Davidson, M. Intrathoracic New Growths and the Value of Bronchoscopy in Diagnosis and Treatment. *Brit. M. J.*, 1932, II, 617.

For the complete investigation of a case in which the presence of an intrathoracic tumor is suspected the following procedures should be carried out in the order in which they are given: (1) careful recording of the history; (2) physical examination; (3) roentgen examination, including fluoroscopy and roentgenography in the lateral and anteroposterior planes; (4) the use of lipiodol; and (5) examination with the bronchoscope. In this scheme it is important for the physician, roentgenologist, and bronchoscopist to work together as far as possible.

Primary bronchial and pulmonary growths may be divided into the following clinical groups: (1) those in which hæmoptysis is the initial symptom; (2) those in which the first manifestation of illness is the occurrence of a pleural effusion; (3) those in which there is a localized infection in the thorax due to the breaking down of a growth; (4) those with an unexplained bronchitis which is usually associated with dyspnea and occurs especially in elderly persons; and (5) obvious cases in which the presence of a massive growth is at once suggested by the symptoms and signs of pressure. The author reports four illustrative cases in detail.

EDWARD D. CHURCHILL, M.D.

Pancoast, H. K. Superior Pulmonary Sulcus Tumor. *J. Am. M. Ass.*, 1932, XCIX, 1301.

Pancoast reports seven cases of tumor at the upper thoracic inlet which were characterized clinically by pain around the shoulder and down the arm, Horner's syndrome of cervical sympathetic paralysis, and atrophy of the muscles of the hand. The roentgenogram showed a small homogeneous shadow at the extreme apex, with destruction of one or all of the upper three ribs in their posterior aspects and of the adjacent transverse processes, and sometimes with slight erosion of the bodies of the vertebrae. Death occurred as a result of what seemed to be a trivial growth without detectable metastases.

As the use of the term "apical chest tumor" to designate tumors of this type has been found inadvisable, the author suggests the term "superior pulmonary sulcus tumor" as a substitute. The disease entity is described on the basis of its clinical rather than its histopathological characteristics. In one instance the specimen removed for biopsy was identified as a spinocellular carcinoma. In another, the biopsy diagnosis was merely carcinoma. Despite the lack of further pathological data, the author regards this tumor as a distinct entity possibly arising in an embryonal epithelial rest. He believes that

a primary carcinoma of the lung can be excluded, but does not present the evidence on this point in detail. The tumors appear to be resistant to irradiation.

EDWARD D. CHURCHILL, M.D.

Pirchan, A., and Siki, H. Cancer of the Lung in the Miners of Jáchymov (Joachimstal). *Am. J. Cancer*, 1932, XVI, 681.

While Jáchymov (Joachimstal), a small mining town with about 8,000 inhabitants situated on the Bohemian side of the Erz mountains in Czechoslovakia, has been world-famous as a source of radium from the beginning of the present century, the history of its mines is still older. Here, as in Schneeberg, there has been for a long time a considerable mortality from pulmonary disease among the miners. The miners call the disease *Bergkrankheit* or *Bergsucht*.

As a result of systematic clinical examinations and especially of autopsy studies, it has been established that lung cancer is highly prevalent in Jáchymov miners. Of 13 miners coming to autopsy in 1929, pulmonary cancer was found in 9. In 5, generalized metastasis had occurred by way of the lymphatics as well as by way of the blood stream. The anatomical form of the tumors showed no special features. The circumscribed form was the most frequent. Histologically, the tumors were classified as oat-celled carcinomata, epidermoid carcinomata, and primary pleural carcinomata.

The course of the disease varied. In 3 cases there was a history of specific symptoms for from six to nine years. In the rest, the course of the condition was much shorter. In the case with the shortest duration the symptoms had been noted for only ten weeks. It is highly probable that in some cases the tumors developed a considerable time before the first appearance of the symptoms and the symptoms were due to generalization. It was impossible to draw definite conclusions as to the incubation of the tumor after the man ceased work. In 1 case the period was apparently twenty-seven years. The time spent in the mines by the men with carcinoma ranged from thirteen to twenty-three years. Only 2 of the men belonged to the active staff. The others had been out of work for from one to twenty-seven years.

Unlike the Schneeberg cases, no notable degree of anthracosis or silicosis was found in the lungs of the miners coming to autopsy, except in the case of 1 man who was non-cancerous. Therefore no importance can be attached to these conditions in the genesis of the tumors. Chemical analysis of lung tissue in 1 case for arsenic, bismuth, cobalt, nickel, and uranium gave a negative result. It was impossible also to prove radio-activity.

As the most probable cause of tumors, radium emanation, which is contained in the air of Jáchymov pits up to 50 maché units, might be considered. A cumulative effect of small quantities of emanation inhaled for a period of many years may be assumed.

EDWARD D. CHURCHILL, M.D.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Tweet C. C., and Bottomley A. C.: The Etiology of Breast Cancer. *Lancet* 93 ccxviii, 776.

On the basis of experimental work carried out on rats, the authors suggest that the chief etiological factor in carcinoma of the breast is a group of compounds containing the carbon skeleton of phenanthrene acting in conjunction with oleic and other unsaturated fatty acids. They advance the theory that the female breast which is not allowed to function normally is more likely to develop cancer than the breast which has lactated because in the former decomposition of the excretory products and subsequent liberation of oleic acid and other fatty acids occurs. Under such conditions the products of decomposition will be unable to find their way to the surface and will remain in the gland acini and ducts which represent a modified epidermal cell.

JOHN H. GARLOCK, M.D.

TRACHEA, LUNGS, AND PLEURA

Dull, F.: Thoracoplasty in the Treatment of Pulmonary Tuberculosis (Die Thoracoplastik in der Behandlung der Lungen tuberculosis). *Verhandl. d. 7. Conf. internat. Ver. 22. Feb., 23* P. 9.

Patients with unilateral or practically unilateral pulmonary tuberculosis in whom artificial pneumothorax cannot be induced or does not give the desired result can be cured by complete or partly extrapleural thoracoplasty alone or combined with pneumothorax or phrenic esecrasis. The operation should be undertaken only after consultation with the general practitioner who after a prolonged period of observation, is in a position to form a definite opinion as to the prognosis of the case. Clinical symptoms must be absent in the other lung or if present must be slight and stationary.

The extrapleural thoracoplasty is carried out through a paravertebral incision with resection of the ribs from the eleventh or tenth rib up to and including the first. The resection of the ribs must be done as far back as possible preferably close to the transverse processes of the vertebrae. The two-stage operation has a lower mortality than the one-stage operation. The operation does not cause marked permanent injuries. The choice of local or general anesthesia is of little importance in the result.

Thoracoplasty is indicated when a sanatorium treatment for three or four months does not lead to improvement and pneumothorax cannot be induced successfully. Repeated hemoptysis is a special indication. Cavities as large as a walnut or larger heal more rapidly and more surely after an operation than with expectant treatment. If a cavity does not

collapse after thoracoplasty it can be collapsed by pneumolysis with fat or paraffin filling or by tamponade or drainage. The chronic productive form of tuberculosis is best suited for thoracoplasty. In the purely exudative forms of tuberculosis, thoracoplasty is much more dangerous. From 35 to 40 per cent of the patients who can be saved by no other means are rendered able to work by thoracoplasty. About 30 per cent derive some benefit from the operation, but die later from tuberculosis. About 16 per cent are not benefited, about 6 per cent become worse and about 10 per cent die from the intervention or within eight weeks. All sanatorium physicians and general practitioners should know the indications for thoracoplasty and the results of the operation. Today no one has the right to deprive patients of the advantages of this treatment if they are suited for the operation. RASCHKE (2).

Terracol: The General Indications for Bronchoscopic Treatment of Bronchopulmonary Suppurations (Les données générales du traitement bronchoscopique des suppurations broncho-pulmonaires). *Arch. méd.-chir. de P. 1928* 124, 24, 93.

Following a brief review of the history of bronchoscopy from the conception of the procedure by Horace Green of New York in 1925 down to the present time, the author describes the types of instruments used by different bronchoscopists, the technique of the procedure, and the position of the patient. He emphasizes that before bronchoscopic examination or treatment is undertaken in cases of pulmonary suppuration a very careful study of the patient should be made. If a foreign body is found in a bronchus it should be removed at once. If the cause of the suppuration is obscure, the site and the character of the bacterial flora of the abscess should be determined with care. It is generally agreed that bronchoscopy is indicated in cases of pulmonary abscess near the hilum, and surgery in cases of juxtaparietal abscess of the lung. In cases of single well-defined abscess with little periventricular reaction the prognosis of bronchoscopic treatment is good. The character of the treatment depends to a considerable degree on the character of the bacterial flora. In cases of anaerobes, aspiration which supplies oxygen acts quite rapidly whereas in cases of streptococci it is less effective. When the abscess cavity is accessible, aspiration, instillation, or cauterization may be done. If no improvement is noted after from three to six treatments over a period of from seven to ten weeks surgical intervention should be considered.

Bronchoscopic treatment yields its best results in cases of acute pulmonary abscess. In cases of

trated the bicuspid valves and projected into the left ventricle. On microscopic examination the tumor was found to be a typical bronchogenic carcinoma.

The author reviews the literature on primary and metastatic tumors of the heart. The most common source of carcinoma of the heart is carcinoma of the lungs. Carcinoma of the heart has no pathognomonic signs and is rarely, if ever, diagnosed clinically.

EDWARD D. CHURCHILL, M.D.

ESOPHAGUS AND MEDIASTINUM

Haagensen, C. D. The Differential Diagnosis of Primary Neoplasms of the Mediastinum. *Am J Cancer*, 1932, xvi, 723.

Primary neoplasms of the mediastinum are classified as follows:

A Malignant

1 Lymphosarcoma

(a) Small round-cell lymphosarcoma (malignant lymphocytoma)

(b) Large round-cell lymphosarcoma (reticulum-cell lymphosarcoma)

2 Hodgkin's disease.

3 Leukæmic lymphoma

4 Leucosarcomatosis

5 Thymic carcinoma

B Benign

1 Dermoids

2 Other cysts, including echinococcus cysts and ciliated epithelial cysts

3 Ganglionic neuromata and neurofibromata

4 Benign connective-tissue tumors, including fibroleiomyomata, fibromata, chondromata, and lipomata

The author reports in detail nine cases of various types of primary mediastinal neoplasms and discusses the differential diagnosis of these neoplasms in relation to the age of the patient, the duration of the disease, the clinical findings, the roentgenographic findings, and the reaction of the neoplasm to a test dose of irradiation. He disapproves of attempts to classify mediastinal tumors on the basis of radiosensitivity as occasionally lymphosarcoma, Hodgkin's disease, leucosarcoma, and the leukæmic lymphoma group are radioresistant.

EDWARD D. CHURCHILL, M.D.

McKerny E. T., and Brennemann, J.: Aspiration in the Treatment of Empyema in Children, with a Critical Evaluation Based on Ninety-Four Cases. *Am. J. Dis. Child.*, 1932, xlv, 742.

In the ninety-four cases of empyema in children treated by aspiration which are reviewed by the authors the total mortality was 22.8 per cent. Seventy-two per cent of the patients recovered with out operation, 70 per cent were cured by aspiration alone, and two recovered following spontaneous rupture through a bronchus without local treatment. In thirteen cases in which operation was done after repeated aspirations the only death was due to tuberculous meningitis. In 54 cases, pyopneumothorax occurred. In twelve it occurred spontaneously and in forty-two after aspiration. In the former there were no deaths, and in the latter eight deaths. The authors formerly expressed opinion that this complication is relatively harmless remains unchanged. Spontaneous pneumothorax, which was always accompanied by the free coughing up of pus, seemed, on the whole, a help rather than a hindrance to quick recovery.

Infants and young children do better when treated by aspiration alone than when treated by open operation, and respond more favorably to aspiration than older children.

In sixty-seven (71 per cent) of the ninety-four cases reviewed the empyema was due to the pneumococcus, in nine (9.6 per cent) to a staphylococcus in seven (7.4 per cent) to a hemolytic streptococcus and in three (3.2 per cent), to the streptococcus viridans. In one instance the only organism obtained was the bacillus pyocyaneus. The mortality as related to the types of organisms was as follows: pneumococcus, 7.5 per cent; streptococcus hemolyticus, 18 per cent; streptococcus viridans, 55.3 per cent; and staphylococcus, 44.4 per cent. A staphylococcus was responsible for 35.3 per cent of the total number of deaths and 80 per cent of those of infants under two years of age.

In no instance was there a recurrence of the empyema due to an undrained or unabsorbed residue of pus. The only serious complication was pericarditis with fluid in the pericardial sac in two cases. Both of the patients with pericarditis recovered, one with, and the other without local treatment. In a number of cases, septicemia was present when the empyema first appeared. While this condition made the authors favor earlier operation, they were unable to note any difference in its course in the cases which were operated upon and those which were not operated upon.

The authors are convinced that fairly large amounts of pus can safely be left to absorb, and that certain patients with limited empyema will get well without treatment. From a review of the literature they conclude that the theoretical benefits of the use of ethylhydrocupreine have not been demonstrated in practice. They state that empyema is not a condition requiring an emergency operation as was once believed. The danger latent in open pneumo-

thorax following early operation performed before there is time for fixation of the mediastinum, waling off and ripening of the pus, and subsidence of the acute infectious process is greatest in early childhood and was largely responsible for the high mortality in infancy in the past. This danger is avoided by aspiration for a time, with or without subsequent operation, and by other efficient closed methods with or without preceding aspiration. In all cases of empyema in children, regardless of the patient's age or condition or the causative organism, aspiration should be performed for a period of time depending on the patient's reaction as regards temperature, toxicity, progress of the local condition, and general condition. If, after a reasonable time and a reasonable number of aspirations, the course of the disease seems unduly prolonged or unchangeable, open operation with simple incision and tube drainage should be performed. Rib resection should be done only if it seems indicated because of inadequate intercostal space. In the first two years of life, and especially in the first year aspiration or some other closed method is the procedure of choice.

CHARLES BROWN, M.D.

HEART AND PERICARDIUM

Powers, J. H.: The Surgical Treatment of Mitral Stenosis. An Experimental Study. *Arch. Surg.* 1932, xlv, 535.

In a previous communication the author described his method of producing chronic mitral stenosis in dogs. Electrocoagulation of the mitral valve is followed by intravenous inoculation with cultures of streptococcus viridans. Five dogs in whom this lesion was produced were subjected to partial valvectomy by surgical measures. The animals died within from three hours to nine days after the operation. Physiological and pathological observations on these animals are used by the author to support his contention that death was due to acute cardiac failure attendant on the abrupt and radical conversion of uncomplicated stenosis into stenosis with insufficiency. It is believed that the creation of a large defect in the scarred and contracted orifice of mitral stenosis is an extremely hazardous procedure on account of the liability to fatal acute cardiac decompensation.

EDWARD D. CANNICK, M.D.

Mead, G. H.: Metastatic Carcinoma of the Heart Secondary to Primary Carcinoma of the Lung. *J. Thoracic Surg.* 1932, iv, 87.

Carcinoma of the heart is extremely rare. In the case of metastatic carcinoma of the heart reported by the author that of a man sixty-five years of age, the clinical diagnosis was not established definitely and an exploratory operation was performed. A tumor was discovered in the anterior portion of the right chest. Autopsy showed this to be a carcinoma which, originating in the right lung, had entered and grown in the right pulmonary vein and involved the right atrium. The carcinomatous tissue had pro-

down through the lacuna vasorum, but the cause of the traction is difficult to explain. Abnormal gubernacular bands have been considered by some to be the cause, but if the gubernaculum could influence the descent of the peritoneum it would do this extremely early in life and not after birth. Another possibility is traction of the covering of fat which is present normally in the crural region and is practically always found covering the fundus of the sacs. How fat could act in this way has not been explained, but similar conditions are probably present in the formation of the hernia through the vascular foramina of the linea alba and it seems reasonable to assume that they can occur also in the femoral region.

JOHN J. MALONEY, M.D.

Bevan, A. D. Abdominal Incisions and Their Closure. *Ann Surg*, 1932, xcvi, 555

A surgical incision in the abdomen should give adequate exposure, inflict minimal injury on the nerve and blood supply and the function of the abdominal muscles, and heal with firm union. The author discusses these principles with regard to a variety of abdominal incisions, including the McBurney, oblique kidney, Kocher, Mayo-Robson, and Bevan incisions. His discussion is supplemented with illustrations.

An incision recently developed by the author and appearing most satisfactory begins in the angle between the ensiform process and the costal arch, a little to one side of the median line, passes downward in the linea alba to a point about 1 in. above the umbilicus, and then turns sharply outward 3 or 4 in. In its lower curved portion it is carried through the anterior sheath of the rectus. The exposed rectus muscle is then pulled outward with a blunt hook retractor to expose its posterior sheath and the posterior sheath is divided transversely to the extent of 3 or 4 in. The muscle is then retracted laterally with its nerve and blood supply intact. The incision may be used for exposure in either the right or the left upper quadrant of the abdomen.

In the closure of the wound the peritoneum and posterior sheath of the rectus are closed with rather fine catgut. Then, about every 2 in., a tension-button suture is passed through the skin, the superficial fascia, and the anterior sheath of the rectus. The buttons are ordinary pearl buttons $\frac{7}{8}$ in. in diameter. Two pieces of silk-worm gut threaded on a large curved needle are passed through the two eyes of each button and tied. These sutures are passed about $1\frac{1}{2}$ in. from the line of the incision. As a rule three or four tension-button sutures are employed. Between and above and below them a single strand of silk-worm gut is introduced through the skin, the superficial fascia, and the anterior sheath of the rectus $\frac{1}{4}$ in. from the line of the incision. The anterior sheath of the rectus is then closed with catgut and the skin with black silk. Metal clips are not employed. The author has found that the use of tension-button sutures has practically eliminated opening up of his incisions.

For postoperative evisceration Bevan inserts a number of silk-worm-gut sutures through all of the layers of the abdominal wall under local anesthesia. A strip of flat metal is inserted beneath the loops of the sutures to hold the protruding abdominal contents down and is withdrawn slowly as the sutures are drawn up in turn. The sutures are threaded through and tied over buttons on either side of the wound.

G. D. DELPRAT, M.D.

Meleney, F. L., Olpp, J., Harvey, H. D., and Zaytseff-Jern, H. Peritonitis II. Synergism of Bacteria Commonly Found in Peritoneal Exudates. *Arch Surg*, 1932, xxi, 700

Following a brief review of the history of the study of symbiosis the authors report an investigation of the action of the bacillus coli, the clostridium welchii, and the non-haemolytic streptococcus injected separately and in various combinations into the peritoneal cavities of mice. Numerical estimates of the bacteria to determine the minimum lethal dose were made with the Gates turbidimeter. The organisms were obtained from an infected abdominal wound of a patient who had been subjected to resection of the intestine.

It was found that, when first isolated, the bacillus coli had a lethal effect in considerably smaller doses than the clostridium welchii or the intestinal streptococcus. In nearly all of the experiments mixtures of the organisms had a lethal effect in considerably smaller doses than the pure cultures. The authors believe that they have demonstrated a definite synergistic action of these organisms. They recommend the making of smears and cultures of all peritoneal exudates as an aid in prognosis.

C. G. SHEARON, M.D.

Warfield, J. O., Jr. A Study of Mesenteric Cysts. *Ann Surg*, 1932, xcvi, 329

The author discusses the history, frequency, theories as to the etiology, pathological classifications, symptoms, diagnosis, prognosis, complications, and treatment of mesenteric cysts, and reports two cases in detail. In a review of the literature since 1920 he collected 129 cases. These are tabulated with regard to the sex and age of the patients, the location of the cysts, and the types of operation and results.

The author's cases were those of boys six and two and a half years of age. In the first case there was a large cyst in the mesentery of the colon, and in the second, a cyst of the mesentery of the small bowel. In both cases operation was followed by recovery.

CARL R. STEINKE, M.D.

Peterson, E. W. Mesenteric and Omental Cysts. *Ann Surg*, 1932, xcvi, 340

Following a review of the theories regarding the pathogenesis of mesenteric and omental cysts, the author reports six cases which were operated upon with no mortality. The latter may be summarized briefly as follows:

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

McNulty R. W., and Lichtenstein, M. E.: Post operative Hernia. *Am J Surg* 193 2:11, 50.

The authors present experimental evidence and clinical observations relative to the etiological factors in the production of postoperative hernia. The most common of these factors are

1. Excessive tension on the suture line. This results in tearing out of the sutures with the insinuation of abdominal contents between the previously approximated layers.

2. Malocclusion of the layers of the abdominal wall. The suturing of fascia to fatty tissue does not result in firm union. Like layers must be approximated, such as fascia to fascia and skin to skin.

3. Too prolonged perforation of the abdominal wall by a drain. This results in a fibrous ring-like opening in the fascial layers through which the abdominal contents may later protrude.

4. Infection causing sloughing of the fascial linings of the abdominal wall. This is usually due to too firm approximation of the fascial layers which interferes with their blood supply.

5. Muscle paralysis due to excessive trauma to muscle tissue from the use of retractors or severance of the nerve supply resulting in loss of the support of the muscle which acts as a splint over the subjacent sutured layers.

6. Systemic conditions such as diabetes, tuberculosis, and carcinomatous infiltrations which inhibit firm union.

The authors emphasize the importance of the intact transversalis fascia as a buttress to the abdominal wall, the accurate approximation of incisions through this layer, the accurate approximation of like structures, and the relief of tension on the suture line after closure of an abdominal wound by the intelligent application to the abdomen of binders and adhesive tape.

Tasche L. W.: The Etiology of Femoral Hernia. *Arch Surg* 1932, 23: 749.

The author first reviews the various theories regarding the cause of femoral hernia. In order to determine accurately the size of the lacuna vasorum he measured it in fresh autopsy specimens from thirty female and thirty-four male puerperae and newly born infants, eight children of various ages, thirty women and thirty men. From these and other studies the following facts are apparent.

Femoral hernia are relatively uncommon before the age of twenty years and probably have never been seen before the age of two years. They increase in frequency with age. They are more common in females than in males, and in women who have

borne children than those who have not borne children. Heavy manual labor, asthma, chronic cough, and debilitating diseases are often factors in their appearance if not in their original formation. They are eight times more likely to become strangulated than inguinal hernia. A large number of the sacs seen at operation are empty. Most of them are small even when they contain omentum or bowel. When abdominal contents are present in the sac, they are frequently strangulated. Most sacs are surrounded by a definite layer of fat. Recurrences following hernial repair including removal of the sac, are common.

Autopsy on adult bodies often reveals peritoneal diverticula which were unrecognized during life. As a rule they are empty. These pouches are as common in males as in females. Femoral diverticula have never been found in newborn infants who are otherwise normal.

Femoral hernia have been recognized clinically most often in women who have borne children, probably because of the added strain occurring during labor which forces omentum or bowel into the sac already formed and thereby calls attention to it. In dead bodies studied the incidence of femoral hernia sacs is the same in both sexes. The increase in the size of the lacuna vasorum that occurs with age is probably a factor in the increased frequency of femoral hernia in the later decades of life. This increase is due undoubtedly to relaxation of the ligaments, fascia, and muscles.

In the female, Poupert's ligament is shorter and the foramen vasorum, the caliber of the femoral vessels, and the size of the femoral ring (the area of the space available for the development of a femoral hernia) calculated by subtracting the diameter of the cross-section area of the two vessels from the total area of the lacuna vasorum are smaller than in the male.

Like the femoral arteries, the lacuna vasorum increases with age. This increase begins in early fetal life and continues to old age. The femoral veins show a similar correlation until adult life is reached, when the caliber varies with changes in weight and height.

As femoral hernia sacs are found frequently in adults, especially in the later years of life, and never in newborn infants, these diverticula are evidently acquired. They are usually empty but when abdominal organs enter them they frequently become strangulated. It seems highly improbable that an organ that cannot be easily reduced into the abdominal cavity could originally have been of much influence in the formation of that sac.

The formation of all femoral hernia sacs may be attributed to traction which draws the peritoneum

The stomach wall is greatly thickened, soft, and boggy. The serosa is reddened and covered with yellowish fibrin. The mucosa is usually smooth and has no rugæ. Microscopic examination of the mucosa reveals marked round-cell infiltration between the gastric glands and extensive degeneration of the secreting cells. The submucous coat shows the most marked involvement. It is thickened and oedematous and invaded by a large number of leucocytes. The blood vessels are dilated. Many organisms are found.

As a rule there is a history of previous gastric distress followed by the sudden onset of severe abdominal pain. Signs of peritonitis develop early. Fever and vomiting usually occur. The patient appears acutely ill. In the majority of cases the white count is high. In one of the author's cases an abdominal puncture was done and a thin, turbid, slightly reddish fluid was obtained. The presence of streptococci in the fluid confirms the diagnosis of phlegmonous gastritis. The author believes that in the acute stage the X-rays are of value. The prognosis is unfavorable, but is better in the localized type of the condition than in the generalized type. The most frequent cause of death is peritonitis. In the diffuse form the treatment is surgical. Palliative jejunostomy is indicated.

The author reports a case in which there was diffuse involvement of the duodenum, œsophagus, and entire stomach. Jejunostomy was done and the peritoneum drained. The patient died three days after the operation.

Of 13 cases reviewed by the author, operation was performed in 9 and recovery resulted in 3. In all of the cases with recovery the disease was of the localized type. In 6 (45 per cent) of the cases there was an associated gastric carcinoma or gastric or duodenal ulcer. In 1 case the condition was precipitated by the ingestion of zinc chloride. In another it developed during the course of streptococcus pneumonia. In 7 of the 9 cases in which operation was performed a pre-operative diagnosis of perforated ulcer was made. In 1 of the remaining cases the diagnosis was generalized peritonitis, and in the other, cholelithiasis. Bacteriological studies were carried out in 5 cases. In 4 cases they showed streptococci, and in 1 case the bacillus welchii. In 1 case, streptococci were associated with the bacillus proteus, and in another with the bacillus welchii.

ALTON OCHSNER, M.D.

Harris, S. Jr., and Morgan, H. J. The Isolation of *Spirochæta Pallida* from the Lesion of Gastric Syphilis. *J. Am. Med. Ass.*, 1932, xcix, 1405.

Prior to this report the relationship between syphilis and gastric disease lacked scientific proof. Both clinical and histological diagnoses of gastric syphilis were based on a knowledge of co-existing syphilis and the exclusion of other known causes of gastric lesions. Spirochetes have been obtained from gastric lesions at autopsy, but no proof that they were the *spirochæta pallida* has been offered.

The authors report the identification of the *spirochæta pallida* in a gastric lesion and a regional lymph node in a male negro. After excision of the lesion and the lymph node and the demonstration of the *spirochæta* on microscopic section, the gross tissue was macerated in salt solution and injected into a testicle of each of two rabbits. Both rabbits developed testicular syphilomata, one developed a scrotal chancre, and the *spirochæta pallida* was found in the affected testicle of both.

CHARLES F. DUBOIS, M.D.

Matthews, W. B., and Dragstedt, L. R. The Etiology of Gastric and Duodenal Ulcer, Experimental Studies. *Surg., Gynec. & Obst.*, 1932, lv, 265.

As the healing of acute lesions in the stomachs of experimental animals is apparently not hindered by the corrosive action of normal gastric contents, the authors carried out experiments to determine whether pure gastric juice with its higher free acid inhibits healing. In dogs, a counterpart of ulcer of Meckel's diverticulum in man was produced by implanting a small pouch of the gastric wall (Pawlow pouch) directly into the ileum or jejunum. Following this procedure pure gastric juice emptied directly into the intestine. When the implantation site was the ileum, the incidence of chronic progressive ulcer was 100 per cent, and when the implantation site was the jejunum, the incidence of chronic progressive ulcer was 85 per cent.

To substantiate the acid-pepsin genesis of experimental ulcer further, the internal duodenal drainage operation of Mann and Williamson was repeated, but the duodenum was anastomosed 40 cm. below the gastrojejunostomy instead of the terminal ileum. In twenty-one such preparations ulcer resulted only once. This low incidence of ulcer is explained by the regurgitation of alkaline duodenal contents to the region of the gastrojejunostomy, which decreased the corrosive action of the gastric contents. When a valve was introduced to prevent regurgitation, chronic jejunal ulcer resulted in six of ten dogs.

The prevention of the regurgitation of alkaline duodenal juices in normal dogs by fixing a valve in the pylorus raised the free and total acidity of the gastric contents after a standard test meal, delayed the neutralization of 0.5 per cent by hydrochloric acid introduced into the stomach, hindered the healing of acute ulcers in the gastric mucosa produced by the injection of silver nitrate, and caused the appearance of spontaneous ulcers in transplants of intestinal mucosa sutured in defects in the stomach wall.

SAMUEL J. FOGELSON, M.D.

Ginzburg, L. X-Ray Diagnosis of Acute Intestinal Obstruction Without the Use of Contrast Media. *Ann. Surg.*, 1932, xcvi, 368.

The author states that the X-ray diagnosis of acute intestinal obstruction by studies of the gas distribution and fluid levels is by no means a new method, but is apparently not as widely used as its importance seems to warrant.

Case 1. Male aged five years and ten months. Diagnosis. Probably cystic degeneration of a tuberculous lymph node of the mesentery of the lower ileum.

Case 2. Female aged thirty-one years. Diagnosis. Simple cyst within adhesion. Location not stated.

Case 3. Male aged six years. Diagnosis. Multiple cysts of the mesentery of the lower ileum of unrecognized origin intimately attached to the small intestine.

Case 4. Male aged fifty-nine years. Diagnosis. Embryonal carcinoma of a cyst of the mesentery of the lower ileum.

Case 5. Female aged twenty-six years. Diagnosis. Acute purulent excoriation of chronic appendicitis, subacute appendicitis, three cysts of mesentery of the lower ileum, probably tuberculous.

Case 6. Child aged four years. Diagnosis. Congenital peritoneal cyst of the omentum with acute secondary infection.

The author discusses the symptoms, diagnosis, and treatment. The treatments include enucleation, resection, and drainage. CARL R. STORCK, M.D.

GASTRO-INTESTINAL TRACT

Rivers, A. R., and Wilbur, D. L. Intrinsic Gastrointestinal Lesions as Causative Factors of Hematemesis. *Arch. Int. Med.* 93, 1, 61

Intrinsic gastroduodenal lesions—peptic ulcer, gastric carcinoma, inflammatory processes, and benign tumors—accounted for approximately 90 per cent of 663 cases of hematemesis reviewed from the records of the Mayo Clinic.

The lesion most commonly responsible was peptic ulcer including duodenal, benign gastric, and esophagogastric ulcers. This was the cause of 85 per cent of the cases of hematemesis due to intrinsic gastroduodenal lesions.

Carcinoma of the stomach was the etiological factor in only 12.6 per cent of the cases. In gastric carcinoma, hematemesis usually has the appearance of coffee grounds and is rarely profuse. Massive hematemesis occurs in only 1 per cent of cases of gastric carcinoma.

Localized or diffuse areas of inflammatory reaction of non-specific character in the stomach or duodenum or surrounding a gastro-enteric stoma may lead not only to symptoms suggestive of peptic ulcer but also to hemorrhage even when they do not produce sufficient abnormality in the contour or function of the organs to be recognizable roentgenologically. Such inflammatory areas may be one of the underlying causes of the bleeding previously described as "gastrostasis."

Benign tumors of the stomach and duodenum and tuberculous and syphilitic of the stomach rarely cause hematemesis. Their diagnosis usually depends upon roentgenological or surgical observation.

The mechanism of bleeding of the various intrinsic gastroduodenal lesions causing hematemesis is discussed.

Nyfeldt, A., and Vintrop, B.: Acute Gastritis in Functional Diphtheria. *Acta med. Scand.* 99, 1, 447

Of eleven children from one and a half to eleven years of age who came to autopsy after having been ill with faucial diphtheria for from three to seven days, macroscopic changes in the gastric mucosa were found in ten and microscopic changes in all.

Postmortem changes were eliminated by fixing the tissues immediately after death. None of the stomachs examined had a diphtheritic membrane. The most common macroscopic change was lesser rhagis in the fundus and corpus. This varied from multiple pinpoint petechiae to confluent areas of bleeding which gave the folds of the mucosa a brownish discoloration. As a rule there were some defects near the hemorrhagic areas. Hyperemia and edema were present in all cases.

On microscopic examination the hemorrhages were found to be circumscribed perivascular bleedings occurring usually in the subepithelial tissues which, when confluent, appeared as extensive superficial interglandular hemorrhages.

In addition to the hyperemia, edema, and hemorrhage, there was a massive infiltration of polymorphous leucocytes which varied from an occasional leucocyte to a purulent discharge from the mucosa. With the increase of leucocytic invasion, mucosal areas were destroyed and these defects and erosion resulted. The stages in the pathogenesis of these mucosal regions must therefore have been distention of the blood vessels, diapedesis, lesser rhagis, exudation, epithelial necrosis, leucocyte infiltration, and epithelial digestion and erosion. In one case the hemorrhagic process was being replaced by fibroblasts in the base of the erosion which was being covered by proliferating cylindrical epithelium. SAMUEL J. FORD, M.D.

Watson, W. L.: Phlegmonous Gastritis. *Am. J. Surg.* 93, 2, 212, 3

To the 263 cases of phlegmonous gastritis on record the author adds a case of his own. He believes that exploratory needle puncture of the upper abdomen with immediate pathological examination of the material obtained and the making of flat roentgenograms of the upper abdomen are essential in cases in which perforated ulcer, acute pancreatitis, or gastric phlegmon is suspected.

There are two types of gastric phlegmon, the circumscribed and the diffuse. In the former there is a definite collection of pus in the stomach, i.e., an abscess, whereas in the latter there is a widespread inflammation which may involve the entire stomach. The diffuse type occurs about twice as frequently as the circumscribed type.

Gastric phlegmon may arise in gastric ulceration or following surgery of the stomach. In the greater number of cases, however, it is metastatic and associated with a generalized infection. In 70 per cent of the cases the streptococcus is isolated.

The stomach wall is greatly thickened, soft, and boggy. The serosa is reddened and covered with yellowish fibrin. The mucosa is usually smooth and has no rugæ. Microscopic examination of the mucosa reveals marked round-cell infiltration between the gastric glands and extensive degeneration of the secreting cells. The submucous coat shows the most marked involvement. It is thickened and oedematous and invaded by a large number of leucocytes. The blood vessels are dilated. Many organisms are found.

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SAMUEL J. FOGELSON, M.D.

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The author states that the X-ray diagnosis of acute intestinal obstruction by studies of the gas distribution and fluid levels is by no means a new method, but is apparently not as widely used as its importance seems to warrant.

The most complete and accurate data will be obtained if the roentgenograms are taken in the following three positions:

1. With the patient lying on his back and the plate behind him. This position shows most clearly the topographical relation of the coils of small bowel to each other and to the large bowel.

2. With the patient lying on his abdomen and the plate beneath him. This position gives the sharpest definition of the intra-intestinal gas and the bowel outline.

3. With the patient in the erect position. This position will permit the demonstration of fluid levels in the bowel by causing the gaseous contents to rise on the top of the liquid contents.

The roentgenograms should be taken before the administration of enemata or irrigation of the colon.

This article is based on the study of fifty-nine cases of acute mechanical occlusion of the intestines in which the diagnosis made by roentgen examination was proved at operation. The obstruction was in the ileum in thirty-nine cases and in the colon in twenty. In addition the author has seen an almost equal number of cases in which the subsequent clinical course or the findings at operation or autopsy confirmed the conclusion drawn from the roentgen examination that mechanical ileus was absent.

Ginzberg discusses the following conditions in detail: (1) obstructions due to adhesions or bands from an old laparotomy, (2) obstruction due to kinking around a colostomy spur, (3) obstruction occurring in the immediate postoperative course, (4) obstruction due to spontaneous inflammatory bands, (5) spontaneous volvulus of the terminal ileum, (6) tuberculous stricture of the mid-ileum, (7) replacement of a gangrenous loop of small bowel by bands on an irreducible hernia, (8) obstruction in a kink of gut in a small proportionate hernia, (9) strangulated partial enterocoele (Richter's hernia), (10) intussusception in infancy, (11) acute obstruction due to kinking of the ileum by an adhesion to a pyralis, (12) paralysis and reflex ileus with and without peritonitis, and (13) mechanical obstruction of the large bowel. The article contains fifteen roentgenograms. The following conclusions are drawn:

1. The plain roentgenogram of the abdomen without the use of contrast media is a distinct aid to the diagnosis of acute mechanical obstruction of the intestines.

2. It may be a decisive factor favoring operation in cases in which the clinical diagnosis is doubtful.

3. It may prevent exploratory laparotomy in the cases of patients with signs suggestive of ileus.

4. It permits differentiation between obstruction of the large and the small bowel.

5. The cardinal signs of small bowel obstruction are (a) immobilization of dilated loops of small bowel (b) the presence of fluid levels in the small bowel and (c) failure to visualize gas in the colon.

6. Patients with symptoms of ileus in whom gas can be demonstrated in the colon are probably not

suffering from mechanical occlusion of the small bowel.

7. In the immediate postoperative period enema must be used in differentiating mechanical obstruction from paralytic ileus and peritonitis as in all of these conditions the X-ray picture may be the same.

8. The presence of fluid levels in the small bowel alone is not pathognomonic of mechanical obstruction. It has been observed in peritonitis, paralytic ileus, and reflex ileus.

9. Fluid levels and dilated loops of small bowel are probably not due to mechanical obstruction if gas is present in the colon.

10. To reduce the chance of error it is advisable to make roentgenograms with the patient in the recumbent and erect positions.

11. The diagnosis of colonic obstruction is made easily because of the marked distention of the colon proximal to the site of obstruction and the presence of fluid levels with high vertical gas columns.

12. As a rule a distended small bowel is not visualized in colonic obstruction.

13. Localization of the obstruction in the colon is possible roughly. If necessary a barium enema may be used for exact localization.

14. Volvulus of the sigmoid can usually be diagnosed from the X-ray picture.

CARL R. STEINER, M.D.

Erdenmann, J. F. Diverticulitis and Diverticulosis. *J. Am. Med. Ass.* 1932, xlix, 3.

Diverticulitis is four or five times more common in males than in females. It usually involves the sigmoid, in which location it causes marked pain in the left lower quadrant of the abdomen with fever and vomiting. However it may occur in any part of the alimentary tract, including the gall bladder and the appendix. It is most common between the ages of forty and fifty but has sometimes been found in children. The majority of the subjects are of the short, stocky and overweight type.

The cause is held to be a congenital defect rather than herniation or weakness along the mesenteric attachment. The diverticula are of two types, the true and the false. In true diverticula all of the coats of the intestine are found, whereas in false diverticula one or more of the coats are absent.

The pathological types are similar to those of appendicitis. They include the acute, exudative, occlusive, ulcerative, gangrenous, perforative, abscessing, chronic, and malignant. Repeated attacks may occur.

The symptoms and signs are similar to those of the various types of appendicitis. When the condition is not treated surgically the acute stage occasionally terminates by resolution, but more often it leads to abscess formation or perforation. The fulminating type, especially in women, may allow only the diagnosis of an acute condition of the abdomen. In the chronic type there may be enough thickening to cause some degree of obstruction. This type of obstructive lesion is differentiated from malignancy

in the sigmoid or colon by absence of involvement of the mucous membrane

In the acute type the treatment should be surgical even though in some cases the condition might quiet down without it. In the chronic obstructive type the formation of an artificial anus may allow absorption in the thickened portion. In others, resection is necessary and should be done preferably by the Mikulicz method.

Diverticulosis is the presence of diverticula without symptoms. Patients with diverticulosis should use reasonable care to avoid a diet with a large content of roughage, but should not have their attention focused on the anatomical condition.

E S PLATT, M D

Van Zwalenburg, C. Hydraulic Vicious Circle as It Develops in the Intestine. *Am J Surg*, 1932, LVIII, 104.

Hydraulic vicious circle is apt to develop in any case of intestinal obstruction, irrespective of the cause, and especially in cases of hernia with obstruction of the fecal stream. Because of the accumulation of intestinal contents an effusion into the intestinal lumen occurs, the pressure rises until the circulation in the walls of the intestine is obstructed, and complete strangulation results. This process is comparable to the changes occurring in the appendix or an abscess. However, the changes take place more quickly in the intestine than in an abscess because of the ease with which the intestinal vessels may be compressed. The effusion occurs as the result of pressure on the walls of the blood vessels. Bacteria which are present in the loops under anaerobic conditions are allowed to multiply and invade. Interference with the circulation is a most important factor in every case of intestinal obstruction whether the symptoms are the results of dehydration and loss of chlorides or the formation of a toxin.

The author cites experimental observations of his own and those of others which show that distention interferes with intestinal function by increasing the secretion and decreasing the motility of the bowel. In this way a vicious circle results in intestinal obstruction, especially when the distention is sufficient to produce changes in the blood supply of the gut. The author believes that during the gradual return of the bowel to normal after relief of the obstruction enough distention persists for some time to favor more rapid absorption than would occur under normal conditions. As this may be due in part to congestion and de-oxygenation from the poor circulation which increase the permeability of the capillaries, he recommends stripping the bowel of its contents to relieve the intestinal distention as advised by Holden. By this procedure the circulation of the bowel is restored so that normal capillary function returns promptly and toxic and infected materials are removed more effectively. In addition, it is necessary to give treatment for dehydration, toxæmia, circulatory collapse, and shock.

ALTON OCHSNER, M D

Stulz, E., and Fontaine, R. Two Cases of Mesenteric Thrombosis, One of Which Was Operated upon by Simple Exteriorization of the Infarcted Loops and the Other by Exteriorization, Enterostomy, and Late Secondary Intestinal Resection (Deux cas de thrombose mésentérique opérées l'un par simple extériorisation des anses infarctées, l'autre par extériorisation, entéro-entérostomie et résection intestinale secondaire tardive). *Bull et mém Soc nat de chir*, 1932, LVII, 1124.

Operative exteriorization of a diseased loop of small intestine serves a double purpose in avoiding the risks of an extensive resection in the cases of patients in a precarious condition and in permitting self-limitation or spontaneous repair of the lesions present. In some cases it is a procedure of necessity. The lesions may undergo complete repair and the revitalized bowel returned to the abdomen may not even become adherent to the abdominal wall.

The first case reported by the authors was that of a man fifty-nine years old who had a two-stage abdominoperineal resection for cancer of the rectum. Mesenteric thrombosis occurred suddenly two months after the operation. On account of the patient's poor general condition, only exteriorization of the threatened bowel loops was done. The intestine regained its vitality and returned spontaneously to the peritoneal cavity within about a month. Seven months later death occurred from cachexia and cancerous metastases. Autopsy showed that the exteriorized loops which had become adherent to each other before their return to the abdominal cavity had become separated. The thrombosis was attributed to the pronounced atheroma of the superior mesenteric artery and its branches although none of these vessels was completely obliterated.

The second case was that of a man fifty-eight years old who complained of abdominal pain in the left side. When the abdomen was opened, an 80-cm segment of bowel was found discolored and showed the results of mesenteric infarction. Enterostomy by suture was done, the anastomosed loop was returned to the abdominal cavity, and the infarcted loops were exteriorized. The abdominal wall was then partially closed. Vaseline dressings were applied to protect the bowel. On the second day the color of the bowel was improved and gas was passed. On the third day a stool was passed. Later, several fistulae opened in the bowel, and at the end of a month a small pulmonary embolism delayed resection for three weeks. Finally, late resection was performed and the bowel stump returned to the abdominal cavity. The patient recovered. The only sequela was a postoperative hernia.

In the discussion of this report, DES PLAS cited a case of mesenteric thrombosis in a diabetic. The bowel was exteriorized, but the patient died.

LA BEY reported a case in which, at operation for intestinal obstruction supposed to be due to volvulus or pancreatitis, no abnormal condition was found, but at a second laparotomy done several hours later, when the patient was apparently dying, the lower end of the ileum, the cæcum, and the ascending

The most complete and accurate data will be obtained if the roentgenograms are taken in the following three positions:

1. With the patient lying on his back and the plate behind him. This position shows most clearly the topographical relation of the coils of small bowel to each other and to the large bowel.

2. With the patient lying on his abdomen and the plate beneath him. This position gives the sharpest definition of the intra intestinal gas and the bowel outline.

3. With the patient in the erect position. This position will permit the demonstration of fluid levels in the bowel by causing the gaseous contents to rise on the top of the fluid contents.

The roentgenograms should be taken before the administration of enemata or irrigation of the colon.

This article is based on the study of fifty-nine cases of acute mechanical occlusion of the intestines in which the diagnosis made by roentgen examination was proved at operation. The obstruction was in the ileum in thirty nine cases and in the colon in twenty. In addition the author has seen an almost equal number of cases in which the subsequent clinical course or the findings at operation or autopsy confirmed the conclusion drawn from the roentgen examination that mechanical ileus was absent.

Olinberg discusses the following conditions in detail: (1) obstructions due to adhesions or bands from an old laparotomy, (2) obstruction due to kinking around a colostomy spot, (3) obstruction occurring in the immediate postoperative course, (4) obstruction due to spontaneous inflammatory bands, (5) spontaneous volvulus of the terminal ileum, (6) tuberculous strictures of the mid-ileum, (7) replacement of a gangrenous loop of small bowel by tails on an irreducible hernia, (8) obstruction in a knuckle of gut in a small peritoneal hernia, (9) strangulated partial anterocele (Richter's hernia), (10) intussusception in infancy, (11) acute obstruction due to kinking of the ileum by an adhesion to a pyosalpinx, (12) paralytic and reflex ileus with and without peritonitis, and (13) mechanical obstruction of the large bowel. The article contains fifteen roentgenograms. The following conclusions are drawn:

1. The plain roentgenogram of the abdomen without the use of contrast media is a distinct aid to the diagnosis of acute mechanical obstruction of the intestines.

2. It may be a decisive factor favoring operation in cases in which the clinical diagnosis is doubtful.

3. It may prevent exploratory laparotomy in the cases of patients with signs suggestive of ileus.

4. It permits differentiation between obstruction of the large and the small bowel.

5. The cardinal signs of small bowel obstruction are: (a) visualization of dilated loops of small bowel, (b) the presence of fluid levels in the small bowel and (c) failure to visualize gas in the colon.

6. Patients with symptoms of ileus in whom gas can be demonstrated in the colon are probably not

suffering from mechanical occlusion of the small bowel.

7. In the immediate postoperative period caecum must be used in differentiating mechanical obstruction from paralytic ileus and peritonitis as in all of these conditions the X-ray picture may be the same.

8. The presence of fluid levels in the small bowel alone is not pathognomonic of mechanical obstruction. It has been observed in peritonitis, paralytic ileus, and reflex ileus.

9. Fluid levels and dilated loops of small bowel are probably not due to mechanical obstruction if gas is present in the colon.

10. To reduce the chance of error it is advisable to make roentgenograms with the patient in the recumbent and erect positions.

11. The diagnosis of colonic obstruction is made easily because of the marked distention of the colon proximal to the site of obstruction and the presence of fluid levels with high vertical gas columns.

12. As a rule a distended small bowel is not visualized in colonic obstruction.

13. Localization of the obstruction in the colon is possible roughly. If necessary a barium enema may be used for exact localization.

14. Volvulus of the sigmoid can usually be diagnosed from the X-ray picture.

CARE R. STENCK, M.D.

Zuckerman, J. F.: Diverticulitis and Diverticulosis. *J. Am. M. Ass.* 833: 3214, 11, 5.

Diverticulitis is four or five times more common in males than in females. It usually involves the sigmoid, in which location it causes marked pain in the left lower quadrant of the abdomen with nausea and vomiting. However it may occur in any part of the alimentary tract, including the gall bladder and the appendix. It is most common between the ages of forty and fifty but has sometimes been found in children. The majority of the subjects are of the short, stocky and over-weight type.

The cause is held to be a congenital defect rather than herniation or weakness along the mesenteric attachment. The diverticula are of two types, the true and the false. In true diverticula all of the coats of the intestine are found, whereas in false diverticula one or more of the coats are absent.

The pathological types are similar to those of appendicitis. They include the acute, exudative, occlusive, ulcerative, gangrenous, perforative, abscessing, chronic and malignant. Repeated attacks may occur.

The symptoms and signs are similar to those of the various types of appendicitis. When the condition is not treated surgically the acute stage occasionally terminates by resolution, but more often it leads to abscess formation or perforation. The fulminating type especially in women, may allow only the diagnosis of an acute condition of the abdomen. In the chronic type there may be enough thickening to cause some degree of obstruction. This type of obstructive lesion is differentiated from malignancy

in the sigmoid or colon by absence of involvement of the mucous membrane

In the acute type the treatment should be surgical even though in some cases the condition might quiet down without it. In the chronic obstructive type the formation of an artificial anus may allow absorption in the thickened portion. In others, resection is necessary and should be done preferably by the Mikulicz method.

Diverticulosis is the presence of diverticula without symptoms. Patients with diverticulosis should use reasonable care to avoid a diet with a large content of roughage, but should not have their attention focused on the anatomical condition.

E. S. PLATT, M.D.

Van Zwalenburg, C. Hydraulic Vicious Circle as It Develops in the Intestine. *Am. J. Surg.*, 1932, xviii, 104.

Hydraulic vicious circle is apt to develop in any case of intestinal obstruction, irrespective of the cause, and especially in cases of hernia with obstruction of the fecal stream. Because of the accumulation of intestinal contents an effusion into the intestinal lumen occurs, the pressure rises until the circulation in the walls of the intestine is obstructed, and complete strangulation results. This process is comparable to the changes occurring in the appendix or an abscess. However, the changes take place more quickly in the intestine than in an abscess because of the ease with which the intestinal vessels may be compressed. The effusion occurs as the result of pressure on the walls of the blood vessels. Bacteria which are present in the loops under anaerobic conditions are allowed to multiply and invade. Interference with the circulation is a most important factor in every case of intestinal obstruction whether the symptoms are the results of dehydration and loss of chlorides or the formation of a toxin.

The author cites experimental observations of his own and those of others which show that distention interferes with intestinal function by increasing the secretion and decreasing the motility of the bowel. In this way a vicious circle results in intestinal obstruction, especially when the distention is sufficient to produce changes in the blood supply of the gut. The author believes that during the gradual return of the bowel to normal after relief of the obstruction enough distention persists for some time to favor more rapid absorption than would occur under normal conditions. As this may be due in part to congestion and de-oxygenation from the poor circulation which increase the permeability of the capillaries, he recommends stripping the bowel of its contents to relieve the intestinal distention as advised by Holden. By this procedure the circulation of the bowel is restored so that normal capillary function returns promptly and toxic and infected materials are removed more effectively. In addition, it is necessary to give treatment for dehydration, toxæmia, circulatory collapse, and shock.

ALTON OCHSNER, M.D.

Stulz, E., and Fontaine, R. Two Cases of Mesenteric Thrombosis, One of Which Was Operated upon by Simple Exteriorization of the Infarcted Loops and the Other by Exteriorization Entero-Enterostomy, and Late Secondary Intestinal Resection. (*Deux cas de thrombose mésentérique opérées l'un par simple extériorisation des anses infarctées, l'autre par extériorisation, entéro-enterostomie et résection intestinale secondaire tardive*) *Bull. et mém. Soc. nat. de chir.*, 1932, lviii, 1124.

Operative exteriorization of a diseased loop of small intestine serves a double purpose in avoiding the risks of an extensive resection in the cases of patients in a precarious condition and in permitting self-limitation or spontaneous repair of the lesions present. In some cases it is a procedure of necessity. The lesions may undergo complete repair and the revitalized bowel returned to the abdomen may not even become adherent to the abdominal wall.

The first case reported by the authors was that of a man fifty-nine years old who had a two-stage abdominoperineal resection for cancer of the rectum. Mesenteric thrombosis occurred suddenly two months after the operation. On account of the patient's poor general condition, only exteriorization of the threatened bowel loops was done. The intestine regained its vitality and returned spontaneously to the peritoneal cavity within about a month. Seven months later death occurred from cachexia and cancerous metastases. Autopsy showed that the exteriorized loops which had become adherent to each other before their return to the abdominal cavity had become separated. The thrombosis was attributed to the pronounced atheroma of the superior mesenteric artery and its branches although none of these vessels was completely obliterated.

The second case was that of a man fifty-eight years old who complained of abdominal pain in the left side. When the abdomen was opened, an 80-cm. segment of bowel was found discolored and showed the results of mesenteric infarction. Entero-anastomosis by suture was done, the anastomosed loop was returned to the abdominal cavity, and the infarcted loops were exteriorized. The abdominal wall was then partially closed. Vaseline dressings were applied to protect the bowel. On the second day the color of the bowel was improved and gas was passed. On the third day a stool was passed. Later, several fistulae opened in the bowel, and at the end of a month a small pulmonary embolism delayed resection for three weeks. Finally, late resection was performed and the bowel stump returned to the abdominal cavity. The patient recovered. The only sequela was a postoperative hernia.

In the discussion of this report, DES PLAS cited a case of mesenteric thrombosis in a diabetic. The bowel was exteriorized, but the patient died.

LA BEY reported a case in which, at operation for intestinal obstruction supposed to be due to volvulus or pancreatitis, no abnormal condition was found, but at a second laparotomy done several hours later, when the patient was apparently dying, the lower end of the ileum, the cæcum, and the ascending

colon were found absolutely black. Death resulted. This case was cited to show the rapidity of development of gangrene of the bowel.

KILLGORE SMITH, M.D.

Costa, G.: *New Clinical Contributions to the Study of Intestinal Intussusception in Adults* (*Nuovi contributi clinici allo studio delle invaginazioni intestinali in persone adulte*). *Arch Ital di chir* 1935 xix, 237.

The author reports fourteen cases of intussusception—nine those of adults and five those of children. In six cases the condition was associated with a tumor. Each case is discussed in detail.

With regard to the etiology of intussusception, Costa states that the condition is probably the result of a disturbance of the peristaltic mechanism, such as a rigid contraction of one segment of the bowel with a paralytic dilatation of the adjoining segment.

A review of the literature, is followed by a discussion of the direct and differential diagnosis and the accepted methods of surgical management of the condition.

PETER A. ROSE, M.D.

Pignani, L.: *Tuberculosis of the Small Intestine* (*Il tubercoloma del tenue*). *Rivista med* 935 xix, 1065.

Pignani reports two cases of tuberculosis of the first portion of the jejunum, describes the clinical and roentgenological signs of the condition, and reviews the characteristics of various lesions from which the tuberculomata were differentiated by the roentgen examination. He believes that tuberculosis of the small intestine can be diagnosed with the roentgen ray even in obscure cases. In his first case X-ray examination of the lungs was negative for tuberculosis, but in the second, even though he does not say so, the findings suggested pulmonary tuberculosis. In neither case was there operative proof of the diagnosis.

EDMUND T. LAMON, M.D.

Grohn, B. B., Ginsberg, L., and Oppenheimer, G. D.: *Regional Ileitis: A Pathological and Clinical Entity*. *J Am Med Ass.*, 935, xix, 303.

The term "benign granulomata" has been used for a number of chronic inflammatory lesions of both the large and the small intestine, the cause of which is either unknown or believed to be an unusual physical agent. From this group the authors separate and describe a specific clinical entity with constant and well-defined characteristics to which they give the name "regional ileitis."

Regional ileitis is a disease of the terminal ileum occurring chiefly in young adults and characterized by a subacute or chronic necrotizing and cicatrizing inflammation. The ulceration of the mucosa is accompanied by a disproportionate connective tissue reaction of the remaining walls of the involved intestine which often leads to stenosis of the intestinal lumen and the formation of multiple fistulae.

The symptoms, which resemble those of ulcerative colitis, include fever, diarrhea, and emaciation with

eventual obstruction of the small intestine. The constant occurrence of a mass in the right iliac fossa usually necessitates resection.

The disease process begins at the ileocecal valve and gradually decreases in severity as it extends the ileum to an extent of from 20 to 30 cm. As a rule the fistulae lead to segments of the colon, but occasionally they penetrate the abdominal wall. The cause of the condition is unknown. All of the patients who received operation are alive and well.

In cases coming to operation early the terminal ileum is found thickened, soggy and edematous, and the serosa is blotchy red. The mucosa of the terminal ileum is greatly thickened and contains numerous hyperplastic glands. Because of the possibility of spontaneous resolution of the disease process, resection has never been done in the early stage.

In older cases the most recent ulcers are the more proximal lesions and the most advanced changes are at the ileocecal valve. Isolated lesions have been found separated from the hypertrophic mass by normal mucosa. The mucosa is ulcerated and has a bullous or cobblestone appearance. Inflammatory hyperplastic and erosive changes in the submucosa and muscular layers have resulted in enormous thickening of the intestinal wall. The involved loop appears as a soggy mass of hose-like convolutions. The size of the intestinal lumen is greatly diminished, and the obstruction often causes marked distention of loops proximal to the lesion, frequently with the formation of tension ulcers.

At a later stage the exudative reaction is replaced by a fibrostenotic process. The mucosa becomes atrophic and shows occasional superficial trunks and islands of papillary or polypoid hyperplasia. The serosa loses its gloss and frequently exhibits tubercle-like structures on its surface. The mucosa of the affected segment is thickened and fibrotic.

On microscopic examination no specific features can be demonstrated. In some of the cases, giant cells were found in association with groups of large pale cells. The large pale cells were probably vegetable cells taken up by the lymphatics after being trapped in the ulcerated lesions. The giant cells were probably accounted for by the foreign-body reaction around the non-absorbable particles. Extensive investigation failed to reveal any evidence of intestinal or pulmonary tuberculosis.

Of the cases in which the appendix had already been removed, evidence of ileal disease was noted at the time of the appendectomy in about half. In those without previous appendectomy the mucosa of the appendix was normal although the outer appendiceal coats were frequently involved from contact with the adjacent areas of inflammation.

The condition occurs twice as frequently in males as in females. In most of the cases cited the patients had been ill for from several months to two years before they came under observation. The outstanding symptoms are fever, diarrhea, a continuous loss

of weight, progressive anæmia, and abdominal pain. The fever is rarely high and is not continuous. The diarrhoea is never so severe as that of true colitis. The stools contain pus, coagulated mucus, and streaks of blood, but tenesmus is absent. At times there may be constipation. Vomiting and constipation are more frequent when stenosis is present. The pain is usually localized in the lower quadrant of the abdomen on the right side, but occasionally is referred across the lower abdomen to the left side. When the sigmoid becomes adherent to the ileum, fistula formation occurs between these two hollow viscera and the pain is localized chiefly in the left lower quadrant.

On physical examination the most characteristic findings are a mass in the right iliac region, evidence of fistula formation, emaciation, anæmia, the scar of a previous appendectomy, and evidence of intestinal obstruction. The mass is usually palpable through the rectum, but is felt only very high. Even in the presence of obstruction, general distention and ballooning of the abdomen are uncommon.

The clinical course is of four main types (1) that of an acute abdominal disease with peritoneal irritation, (2) a type characterized by symptoms of ulcerative enteritis, (3) a type characterized by symptoms of chronic obstruction of the small intestine, and (4) a type with persistent and intractable fistulæ in the right lower quadrant of the abdomen following drainage for ulcer or an abdominal abscess.

After a barium enema roentgen examination is negative, but after a barium meal it shows distention of the loops of the terminal ileum with a fluid level, delayed motility, puddling, and stricture deformity at the site of a fistulous connection with the colon.

Medical treatment is purely palliative and supportive. There is no possibility of affecting the involved area by enemas or irrigation. In thirteen of fourteen cases, surgical intervention with resection of the affected portion of the ileum was completely successful.

E S PLATT, M.D.

Lett, H., Nitch, C A R, Lockhart-Mummery, J P, Norbury, L E C, and Others. Discussion on Urinary Complications of Diseases of the Large Intestine. *Proc Roy Soc Med*, Lond, 1932, xxv, 1811.

LETT reviews 172 cases of diverticulitis admitted to the London Hospital during the ten years from 1922 to 1931, a case of perivesical abscess, and 2 cases of vesicocolic fistula treated outside the hospital. Of the cases of diverticulitis, urinary symptoms secondary to the diverticulitis were present in 17. The latter included 6 cases with disturbances of urination which might have been due to pericystitis, 1 case of colon bacillus cystitis, 3 cases of perivesical abscess, and 7 cases of vesicocolic fistula. The 2 generally recognized causes of vesicocolic fistula are diverticulitis and carcinoma. Considerable difficulty may be experienced in distinguishing between these conditions even when the mass is examined at operation. It is well known that many patients believed

to have carcinoma of the pelvic colon have made such a good permanent recovery after colostomy as to indicate that the diagnosis should have been diverticulitis.

As during the ten-year period reviewed, 96,192 patients were admitted to the surgical wards of the London Hospital, the incidence of vesicocolic fistula was 1 in 1,000. The diagnosis of vesicocolic fistula can be made only on the evidence of gas or faeces in the urine. When once a vesicocolic fistula has formed, nothing short of a colostomy can be expected to close it. Although from time to time the symptoms may disappear under medical treatment, recurrence is the rule. If a colostomy is done, the bladder symptoms usually subside rapidly, and except for a haze due to the presence of bacteria, the urine becomes normal within two or three weeks. However, if the fistulous opening is large, it may persist in spite of colostomy. In many cases an inguinal colostomy gives excellent results. A transverse colostomy is the operation of choice if the greater part of the pelvic colon is involved in an inflammatory mass, if the affected area encroaches on the proximal part of the pelvic colon to such an extent that there is only a little healthy intestine between it and the colostomy, and if multiple diverticula are present in the descending colon. If the symptoms and fistula recur after the colostomy, resection must be considered.

NITCH states that the combination of bladder and bowel symptoms is almost pathognomonic of an inflammatory condition. Of his series of 20 patients with diverticulitis, 10 had definite urinary symptoms and 7 had a vesicocolic fistula. In 67 patients with carcinoma of the colon and 98 with carcinoma of the rectum the urinary symptoms were almost negligible and a fistula occurred in only 4. The records of St. Thomas' Hospital, London, for the period from 1922 to 1931 inclusive show only 12 cases of vesicocolic fistula. Eight of the patients with such a fistula were males. In 3 cases the fistula was secondary to carcinoma of the rectum, in 3 to carcinoma of the sigmoid, in 1 to carcinoma of the cæcum, and in 1 to carcinoma of the bladder. Of the non-malignant fistula, 2 were due to diverticulitis, 1 was the result of tuberculous vesiculitis, and 1 followed hysterectomy. Thus, in 754 cases of carcinoma of the colon and rectum the incidence of vesicocolic fistula was slightly over 1 per cent, whereas in 73 cases of diverticulitis it was 2.7 per cent.

LOCKHART-MUMMERY, in discussing urinary complications following or resulting from operations for excision of the rectum, says that residual urine is responsible for most of the infections. He believes that the urinary antiseptics in present use are of no value in the prevention or treatment of bladder infections. In operations on the rectum the only safe way of avoiding injury to the ureter is to define it, but this must be done carefully so that its blood supply is not damaged. When necessary, the ureter should be ligated. This procedure is sound if both kidneys are healthy, but is very dangerous if kidney

Infection is present. Of 87 cases of diverticulitis a vesicocolic fistula developed in 4. Lockhart Mummery believes there is grave danger of the development of carcinoma in the abscess, and that immediate colectomy is indicated.

NORMAN states that to prevent urinary infection after excision of the rectum in males he uses an indwelling catheter the outer end of which is sealed by a 1:5,000 solution of oxymercure of mercury as recommended by Duks. He reports 2 cases of vesicocolic fistula, in one of which the fistula was due to diverticulitis of the pelvic colon and in the other to carcinoma of the pelvic colon.

DUKES says that fewer than 3 per cent of patients with cancer of the rectum have infected urine when the condition is first diagnosed, but after surgical excision, about 40 per cent of men and 70 per cent of women develop infection of the urinary tract due to bacteria of the bacillus coli group. The bacteria are transported to the urinary tract by trauma at operation, instrumentation to relieve retention, or the blood stream. In women, the infection is due almost invariably to catheterization. In males with advanced ulcerating growths adherent to the prostate or seminal vesicles, operative trauma is most commonly responsible. In elderly men with residual urine hematogenous infection often occurs after catheterization is stopped. The fact that some patients succumb to infection while others escape may be explained by extrinsic factors such as the stage of the growth, the age of the patient, and the extent of damage to the nerve supply of the bladder.

MILROD states that in treating patients suffering from carcinoma of the rectum and enlargement of the prostate he removes the prostate before the rectum in order to prevent the risk of persistent postoperative retention of urine and grave urinary infection. If there is danger from impairment of renal function the prostate is left in and the bladder is drained by a suprapubic tube.

CHARLES RANDOLPH, M.D.

Adamson, W. A. D., and Alford J.: Megacolon. Evidence in Favor of a Neurogenic Origin. *Brit J Surg* 23: 22, 20.

Division of the sympathetic nerves of the colon is becoming more and more generally regarded as the surgical treatment of choice in cases of megacolon. The remarkable efficacy of lumbar gangliotomies and of the simpler presacral neurectomy of Lowmoor and Rankin suggested that an effort should be made to produce megacolon experimentally by altering the extrinsic nerves of the bowel. The results of such experimental work are reported in this article together with a review of the anatomy of the nerves of the colon.

Megacolon may be defined as dilatation and hypertrophy of a part or all of the colon occurring in the absence of a gross obstructive lesion. Congenital and acquired types are distinguished. The condition has been ascribed to developmental, mechanical, and neurogenic causes. According to the

theory ascribing it to a neurogenic cause, the condition is due to a relative sympathetic overaction. As no anatomical changes are found in the extrinsic nerves of the colon as the authors' dissections of the parasympathetic sacral nerves passing to the lower bowel in a six-month-old child with megacolon revealed no abnormality in these nerves, and as little change can be observed in the cells and fibers of Auerbach's plexus, the lesion appears to be functional rather than organic.

Sympathetic nerves leave the cord in crosses with the anterior roots of the spinal nerves from the second thoracic to the third lumbar vertebra inclusive. They arise from cells in the intermediolateral horn and their function is essentially motor. The sympathetic nerves leave the spinal nerves and pass to the appropriate ganglia of the sympathetic ganglionic chain as white rami communicantes. These fibers are medullated and constitute the preganglionic fibers. Within the ganglion some of them form a synapse around the nerve cell, whereas a second set of fibers arises. These fibers are non-medullated and constitute the postganglionic fibers. They pass to the appropriate spinal nerve as a gray ramus communicans and are distributed to the blood vessels along the branches of the spinal nerve. The sympathetic fibers that are destined for the various viscera take another course. The fibers in a splanchnic nerve end in a synapse in one of the peripheral ganglia, such as the celiac ganglion. From there the postganglionic fibers pass to supply the particular organ. The sympathetic nerves for the rectum are collected in the hypogastric or presacral nerve, which they reach through the middle and two lateral roots of that nerve.

Stimulation of the sympathetic nerves causes a contraction of the sphincters of the bladder and rectum and a consequent dilatation of the walls of these viscera. Stimulation of the parasympathetic nerves results in the opposite effect, a dilatation of the sphincters and a contraction of the walls to permit emptying of the viscera. It is assumed that in health the two sets of nerves are in a state of physiological balance, and that emptying of a viscus results from relative overaction of the parasympathetic nerves.

In experiments on thirty cats, the authors attempted to produce megacolon by cutting out the action of the parasympathetic nerves. After the operation, twenty-five of the cats died at intervals from five to ten days. The cause of death was renal failure. The five cats which survived longer were examined with the X-rays after the administration of a barium enema under controlled pressure. After six weeks there was positive X-ray evidence of dilatation of the colon. At the end of ten weeks the dilatation was well marked, and at the end of fifteen weeks it was gross.

From these findings the authors conclude that they have produced megacolon by relative sympathetic overaction, and that the condition is definitely of neurogenic origin.

JOHN W. MURPHY, M.D.

Christopher, F., and Jennings, W. K. Operative Mortality of Acute Appendicitis *Am J Surg*, 1932, XLVII, 16

The authors state that the mortality of appendicitis in the United States during the year 1930 was 17+ deaths per 100,000 population or a total of 17,687 deaths. In the state of Illinois in 1929, 1,298 persons died from appendicitis, the mortality being 17.4 per 100,000 population. In European countries the mortality is much lower. In Paris, France, in 1929 it was only 6.8 per 100,000 population, while in England and Wales in the same period it was 7.1. Not only do American statistics compare unfavorably with those of European statistics, but there is some evidence for the belief that the mortality of appendicitis in America is increasing.

The authors studied 1,138 cases of acute appendicitis which were operated upon at the Evanston Hospital, Evanston, Illinois, during the last ten years. In all, the diagnosis was confirmed by pathological examination. In 955 cases of the non-perforative type, the gross mortality was 1.78 per cent, and in 269 of these cases in which drainage was used the mortality was 4.8 per cent.

In 183 cases in which perforation occurred prior to operation, the mortality was 16.29 per cent.

The conclusions drawn are as follows:

In non-perforative appendicitis of the acute type the operative mortality when drainage was employed was more than 8 times the operative mortality in cases in which drainage was not employed. However, allowance must be made for the fact that in the cases in which drainage was considered necessary the acute condition of the appendix was probably farther advanced than in the cases in which drainage was not employed. In cases with equally severe symptoms and pathological changes the use of drainage should not affect the prognosis unfavorably. It has long been known that mere speed of operation has little influence on the prognosis.

JOHN W. NUTZ, M.D.

Horslev, J. S., and Warthen, H. J., Jr. The Pathogenesis and Symptoms of Chronic Obliterative Appendicitis *Ann Surg*, 1932, XCVI, 515

Warthen states that chronic obliterative appendicitis, in which the lumen of all or a portion of the appendix has been obliterated, is the result of a chronic inflammatory process that tends to destroy the mucosa and runs a more or less chronic course over many years. He does not agree with those who believe that the condition is the result of physiological involution. The specimens examined have shown all degrees of obliteration of the lumen and in more than half of those without complete obliteration some evidence of inflammation was found on the proximal side of the obliteration. This indicates that the process begins at the tip of the appendix and slowly proceeds toward the base as a simple inflammation of a comparatively mild type. Upon the pathological process of chronic obliteration, an acute appendicitis may be superimposed.

The obliterative type of the disease may exist in any stage, from involvement of a small portion of the tip to complete obliteration of the entire lumen. It may occur at any age, but seems to be most frequent in elderly persons. Acute appendicitis or even rupture may occur in a partially obliterated appendix. In a series of thirteen cases of complete obliteration of the appendix in which operation was performed solely for appendicitis there were definite symptoms before the operation. Eight of the patients were entirely relieved by the operation, three were partially relieved, and two were not benefited.

The diagnosis of obliterative appendicitis is difficult before laparotomy. In the differential diagnosis it is necessary to exclude ureteral lesions, hernia, ulcerations in the terminal ileum and the cæcum, and sacro-iliac disease.

JOHN W. NUTZ, M.D.

Gabriel, W. B. The End-Results of Perineal Excision and of Radium in the Treatment of Cancer of the Rectum *Brit J Surg*, 1932, XX, 234

Gabriel reviewed 370 cases of rectal cancer in which perineal excision was performed at St. Mark's Hospital, London, in the period from 1910 to 1931. In 89 of these cases radium was employed. The operation was that of Lockhart-Mummery. A previous colostomy was done. In many cases the abdomen was explored through a paramedian incision, the colostomy being performed through a separate oblique incision on the left side. The perineal excision was performed from seven to fourteen days after the colostomy.

The method of pathological classification of rectal cancers according to the depth of spread of the lesion has been described by Dukes. "A" cases are those in which the cancer is limited to the wall of the rectum, there being no metastases and no extension into the perirectal tissues. "B" cases are those in which the cancer has spread by direct continuity to the perirectal tissues, but has not invaded the regional lymph glands. "C" cases are those with metastases in the regional lymph nodes.

In the cases reviewed there were 43 operative deaths. The chief causes of postoperative death were secondary hemorrhage, chest complications, and bowel obstructions. A three-year cure was obtained in 86 per cent of the "A" cases, 73 per cent of the "B" cases, and 19 per cent of the "C" cases. In general, excellent immediate and remote results may be anticipated in both "A" and "B" cases, but in "C" cases the prognosis is poor.

The results of radium treatment in rectal cancer are disappointing. Of 12 patients with operable adenocarcinoma who were treated with radium, a good result was obtained in only 2. In no inoperable case was the condition rendered operable by the use of radium. The dangers of abdominal irradiation and posterior barrage are cited. The use of radon seeds is associated with the least operative risk, but

whether this form of rectal needling will give more than temporary palliation remains to be seen.

JOSEF W. MORROW, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Judd, E. S., and Priestley, J. T.: Ultimate Results from Operations on the Biliary Tract. *J. Am. M. Ass.* 1933 xci, 847.

Although cholecystectomy is now generally preferred for primary disease of the gall bladder some surgeons still perform cholecystostomy in a considerable number of cases. The authors' data indicate that the incidence of good results is higher following cholecystectomy. Ordinarily the gall bladder is removed except in the presence of certain definite contra-indications. If the patient is an extremely poor surgical risk, as in the presence of jaundice or a small atrophic liver. If it is anticipated that the gall bladder will be needed because of disease of the common bile duct, and occasionally if there is too much infection surrounding the gall bladder cholecystostomy will often be preferable to cholecystectomy. If cholecystectomy is properly performed, the immediate risk is probably no greater than that of surgical drainage of the gall bladder except under the circumstances mentioned.

During 1931 cholecystostomy was performed at the Mayo Clinic in 579 cases of chronic cholecystitis with a mortality of 1.7 per cent. The authors believe that when it is necessary to open the common duct primary closure is never advisable. A period of drainage with a T-tube, ranging from three or four weeks to a year or more, depending upon the lesion encountered, has given satisfactory results. When this type of drainage is employed, complete control over the flow of bile is maintained as the bile may be drained through the long arm of the tube externally or the tube may be clamped off and the bile thus forced down into the duodenum. If considered desirable, fluids may be administered through the tube. Postoperative stricture of the duct does not result from the use of the tube, and there is no danger of a persistent biliary fistula provided patency of the common bile duct is established at the time of the operation.

Pettinari, V.: The Participation of the Liver in Lesions of the Extrabiliary Biliary Tract (La partecipazione del fegato alle lesioni delle vie biliari extra-epatiche). *Arch. ital. di chir.* 1933, xciii, 333.

Pettinari made functional and histological studies of the liver and bacteriological studies of the excised gall bladder in eighteen cases of gall-bladder disease. In all he found inflammatory degenerative or cirrhotic changes in the various components of the liver. The hepatic lesions were the more severe the longer the inflammation had been present, showed a certain parallelism with the changes in the gall bladder and caused constant hepatic disturbances

which were discernible clinically or by functional tests.

The evidence indicates that in the majority of cases of cholecystitis the liver constitutes the first line of arrest of the bacteria which pass secondarily to the biliary passages where they have their principal localization, and that lesions in the latter lead to injury of the liver cells. The stages in the evolution of the inflammation may be summarized as (1) a mild initial hepatitis, (2) cholecystitis, (3) an attack of secondary hepatitis, and (4) hepatitis of the degenerative or cirrhotic type.

Therefore surgical intervention should not be too long delayed in cholecystitis as cholecystectomy may be followed by rapid cure of the primary hepatic focus and the presence of a septic focus in the gall bladder has a deleterious effect on the structural function of the liver which may become irremediable.

PETER A. ROSE, M.D.

Rose, G. B.: Cholecystography. *Surg. Clin. North Am.*, 1933, xli, 663.

In a study of 1,718 cholecystograms made in the cases of 1,616 patients, Rose found that the intravenous administration of the dye gave more reliable results than the oral administration. The roentgen findings checked with the clinical findings in 1,346 cases.

The most frequent cause of error was gas in the bowel. This simulated stones, caused stones to be mistaken for gas, and partly or wholly obscured the gall-bladder outline.

SAMUEL FELLOW, M.D.

Abbott, D. P.: The Medical Aspect of Gall-Bladder Disease. *Surg. Clin. North Am.* 1933, xli, 797.

The author states that in cases of distress in the upper abdomen all possible causes of the symptoms should be considered even when a pathological condition is recognized as the latter may not be responsible. He calls attention to the fact that as gall stones are often asymptomatic, their presence in association with symptoms does not mean that they are the cause of the symptoms. In cases of distress in the upper part of the abdomen in which the roentgenogram shows a duodenal defect, a diagnosis of ulcer as the cause of the complaints can be made only when there are other signs of ulcer such as hyperacidity, relief of the pain by alkali and food, and response to the therapeutic test. Abbott uses the gall-bladder dye almost routinely in the diagnosis of disease of the upper abdomen.

SAMUEL FELLOW, M.D.

Flemister, D. B., Day, L., and Hastings, A. B.: Calcium Carbonate Gall Stones and Their Experimental Production. *Ann. Surg.* 1933, xcvi, 505.

The authors review forty-eight cases operated upon for gall stones. In eleven the cystic duct was obstructed by a stone. In six of the latter which are reported in detail, there was cholecystitis with a separate deposit of calcium carbonate in the gall

bladder In one case the deposit occurred as a mucous suspension, in one case as a coarse sand, and in four cases as a serous solid paste The five cases of cystic duct obstruction without a calcium carbonate precipitate showed more marked inflammation of the gall bladder with serous exudation and the ordinary picture of hydrops

In 1931, Phemister, Rewbridge, and Rudisill reported eight cases of obstruction of the cystic duct with a separate deposit of calcium carbonate in the lumen of the gall bladder

Experiments carried out on dogs, rabbits, and sheep in an attempt to produce calcium carbonate deposits after ligation of the cystic duct showed that the presence of a low-grade infection was necessary in addition to the obstruction

From a study of the ionic concentration of the calcium in the fluid withdrawn from the gall bladder, the authors concluded that a deposit of calcium carbonate occurs when the limit of solubility of the calcium salt is exceeded, and that the calcium is derived from the wall of the gall bladder

G D DELPRAT, M D

Bevan, A D The Surgical Management of Gall-Stone Disease *Surg Clin North Am*, 1932, XI, 1095

Gall stones occur in about 20 per cent of women between the ages of sixty and sixty-five years of age who have borne children In the majority of cases, however, they cause no symptoms and are found accidentally in a routine X-ray examination of the abdomen It is much safer to remove gall stones before the fiftieth year of age than after the age of sixty After the sixty-fifth year the mortality is two or three times greater than between the thirtieth and fortieth years When there are no symptoms, the author prefers not to operate

Bevan describes a new incision which begins in the midline in the angle between the ensiform process and the costal arch, passes vertically downward in the midline to a point about 1 in above the umbilicus, and then extends outward across the rectus muscle to the outer border The linea alba is divided down to the subperitoneal fat and the peritoneum The incision is carried through the anterior sheath of the rectus muscle, the muscle retracted outward, and the posterior sheath divided in the same line

Another incision suggested is made parallel with the fibers of the internal oblique with splitting of the aponeurosis This incision is recommended also for cases of congenital pyloric stenosis

In the closure of the abdomen the peritoneum and the posterior rectus sheath are approximated with fine catgut up to the midline Only the straight incision then remains to be closed, closure being therefore facilitated Four interrupted silk-worm-gut sutures and three sets of button tension sutures are also employed

In all cases of cholecystectomy the author inserts a small rubber tube through a stab wound from 1½ to 2 in external to the main incision.

The anesthetics of choice are novocain, ethylene, and ether

The black silk skin sutures are removed on the seventh or eighth day, the interrupted silk-worm-gut sutures on the tenth day, and the button sutures on successive days up to the fourteenth day

In the case of a sixty-year-old woman with recurrent attacks of colic, intermittent attacks of jaundice, chills, and fever, a movable stone in the common duct, and a small contracted gall bladder, the author drained the common duct and the gall bladder He believes that in about 20 per cent of cases of this type either carcinoma or chronic pancreatitis is present

Common duct stones impacted in the ampulla often can be reached only by doing a transduodenal choledochotomy The incision in the duodenum is closed by the three-row suture method—fine vaseline-covered Pagenstecher linen for the mucous membrane, catgut for the muscularis and peritoneum, and a Lembert suture of fine catgut

In cases in which a definite carcinoma or chronic interstitial pancreatitis is present, the best procedure is either cholecystogastrostomy or external drainage of the gall bladder, depending on the patient's general condition. NORMAN G PARRY, M D

Judd, E S, and Gray, H K. Carcinoma of the Gall Bladder and Bile Ducts *Surg, Gynec & Obst*, 1932, LV, 308

The authors report a pathological and clinical study of 212 cases of primary malignancy of the gall bladder and 100 cases of malignancy of the extrahepatic biliary ducts These cases represented 1.4 per cent of all cases in which operation for lesions of the gall bladder or biliary tract was performed during the same period of time. Of the carcinomata of the gall bladder, 74 per cent occurred in women, and of the carcinomata of the bile ducts, 51 per cent occurred in men. The average age of the 312 patients was fifty-seven and one-tenth years Seventy-three per cent of the patients were between the ages of fifty and seventy years The youngest patient was twenty-three and the oldest seventy-eight

The clinical picture of carcinoma of the gall bladder or biliary ducts is not distinct and depends entirely on the situation of the lesion and on associated conditions such as infection, stones, and pancreatitis. In the majority of cases the symptoms are of less than six months' duration. However, in many instances the symptoms persist over a period of many years, and during this entire period disease of the biliary tract should be suspected The most frequent symptom is jaundice associated with pain in the right upper quadrant of the abdomen.

The surgical treatment of carcinoma of the gall bladder or biliary ducts may be palliative or radical In 55 per cent of the 312 cases reviewed only an exploratory operation was possible. Cholecystectomy was performed in 59 cases, cholecystostomy in 42, cholecystectomy with choledochostomy in 9, and an anastomotic operation in 27

Of the cases in which the gall bladder was the site of a malignant growth, stones were present in 64.6 per cent. Carcinoma occurred in 140 cases, squamous-cell epithelioma and adenocarcinoma in 15 cases, a papillary form of adenocarcinoma in 5 cases, squamous-cell epithelioma in 4 cases, and lymphosarcoma in 1 case. Of 5 malignant lesions of the bile ducts, all were found on histological examination to be carcinomas and the majority were situated in the common duct. Sixty-five per cent of all growths which were graded proved to be of Grade 3 or 4. Of the patients with tumors of the gall bladder of Grade 3 or 4 in Webber's series, the average length of life was only four and eight tenths months. In cases of carcinoma of the ducts or ampulla the prognosis is still more unfavorable.

While it is not known whether stones are a factor in the production of malignancy of the biliary tract, the high incidence of stones in association with this condition cannot be discounted and must be considered in deciding for or against the removal of stones when they are first discovered.

The importance of early diagnosis of malignant lesions of the gall bladder or biliary ducts cannot be overemphasized. Since it is impossible to recognize a distinct clinical syndrome accompanying malignant invasion of the biliary tract, the condition should be kept in mind in order that treatment may be instituted while it is temporarily controllable, if not curable.

Cameron, G. R., and Oakley, C. L.: *Ligation of the Common Bile Duct.* *Pub. & Sacred* 1938 xxiv 769

In the rat, sudden occlusion of the common bile duct is followed by bile duct hyperplasia with biliary stasis and dilatation of the bile passages. New bile ducts bud off from the interlobar ducts and grow around and between the liver lobules, causing atrophy with consequent hyperplasia of the liver cells. Focal necrosis in close association with the portal canals are seen throughout the period of the animal's survival. They are preceded by congestion of the sinusoids of the affected areas with lysine degeneration of liver-cell columns. Healing occurs by resection and regeneration of liver cells, generally without the formation of scar tissue.

GEORGE A. COLLIER, M.D.

Naegeli, T.: *Surgery of the Spleen (Der Chirurgie der Milz).* *Zentralbl. f. Chir.* 195 D 335

Referring to a review of surgical diseases of the spleen by Slesbeck and Naegeli in the *Zentralblatt für Chirurgie*, 1934, p. 2324, the author limits himself to the advances made in splenic surgery in the last few years. The diagnosis of diseases of the spleen, which previously depended upon palpation, percussion, puncture or biopsy (Henschen) and the blood picture, has recently been facilitated by X-ray examination. Formerly the spleen could be visualized only indirectly by means of pneumoperitoneum or contrast filling of the bowel. In experiments on

animals, Radt and Oks have succeeded in demonstrating it directly by the intravenous injection of thorium dioxide solution (thorotrast). Before this method is suggested for human beings, a warning should be given that fatalities have occurred following the injection (Buengerle and Knetsch) and that histological studies as to late changes in the organs are still lacking.

The surgical procedures applicable to the spleen are splenectomy, ligation or narrowing of the splenic artery, the opening or resection of abscesses and cysts, and, in rare cases of splenic injury, tamponade or suture of the spleen. Narrowing of the splenic artery (Henschen) by means of fascial strips was reported by Payr to the Surgical Congress in Berlin this year. In four cases of leukemia in which Payr performed this operation the spleen became smaller and clinical improvement lasted for one year. Latch believes that, before splenectomy is performed, first the artery and shortly afterward the vein should be clamped provisionally. Blocking of the phrenic nerve in the neck (Lavy) and the injection of adrenalin are also advised as preliminary measures before splenectomy. For the latter Nissen prefers the lumbar approach.

Since the introduction of malarial treatment for tuberculosis spontaneous rupture of the spleen seems to have become more frequent. Spontaneous rupture of a normal spleen—which is very rare—almost always occurs in two stages. Today the treatment of the ruptured spleen consists only of complete splenectomy without leaving portions of the spleen in the omentum. The malarial spleen without rupture is not an indication for splenectomy. In isolated tuberculous of the spleen splenectomy serves to yield gratifying late results. Henschen and Winter have obtained good results in 59 and 60 per cent of cases respectively. In the rare localized lymphogranulomatosis, roentgen irradiation combined with anemic therapy seems to be preferable to splenectomy (Henschen). In the equally rare malignant tumors and the non-parasitic cysts, only splenectomy is to be considered. Very large cysts which cannot be extirpated are sewed into the abdominal wall and opened and drained later. In cases of thrombosis of the splenic veins, acute torsion of the splenic pedicle, and smaller splenic abscesses, only removal of the spleen is considered as a rule. Large splenic abscesses with adhesions should be opened and drained. In cases of cystic tumor in the left hypochondrium, the possibility of echinococcus infection of the spleen should be considered. When the spleen is involved by echinococci, it should be removed if possible. When splenectomy is impossible, opening and evacuation of the cysts followed by the use of formalin can be considered only in exceptional cases. Puncture of the cysts should be abandoned. The liver and lungs should always be examined for echinococci. In hemolytic icterus, which in severe cases is associated with anemia, more or less marked jaundice, and a splenic tumor, good results may be obtained by splenectomy if the anemia is not too

far advanced. After the operation the jaundice disappears and even though the resistance of the erythrocytes remains unchanged, the condition constitutes practically a cure. In some cases, however, a recurrence develops. The operative mortality varies from 2.7 to 18 per cent. Of importance in the diagnosis is the fact that the disease often begins like a gall-stone attack. In Werlhoff's disease (purpura hæmorrhagica, thrombopænia) splenectomy is indicated if blood transfusion is unsuccessful. Under these circumstances splenectomy is preferable to ligation of the splenic artery. Recurrences may develop. Gaucher's disease, which frequently occurs in brothers or sisters (Ruppauer, Lange), the unexplained isolated aspergillosis (occurring particularly in France, Spain, Italy, and Russia) and leukæmia are occasionally influenced favorably by splenectomy. According to Naegeli, aspergillosis is due to small hæmorrhages with calcium or iron encrustations. As a rule, absence of the spleen is well tolerated although the finding of Jolly bodies in the blood as long as twenty years later indicates incomplete compensation for loss of the organ. E. TRAUM (Z)

Dawson of Penn, Lord. The Indications for, and Results of, Removal of the Spleen. *Brit. M. J.*, 1932, 11, 699.

In addition to trauma and certain tumors of the spleen, splenectomy is justified in acholuric jaundice, purpura, and splenic anæmia.

In acholuric jaundice its success is dramatic provided it is performed early. Accordingly, it is often necessary in youth. However, it should rarely be performed before the twelfth year of age. Acho-

luric jaundice is frequently associated with only a minor grade of anæmia. Jaundice may be absent, the spleen not palpable, and the fragility of the erythrocytes not increased. If operation is deferred until all of the classical signs are present, the bone marrow becomes worn out and the anæmia of the aplastic type. It is then too late for splenectomy. When the gall bladder is also involved, splenectomy should be performed first and the gall bladder removed later.

In purpura hæmorrhagica the results of splenectomy are no less spectacular. Failures occur when the diagnosis is inaccurate. Bleeding, delayed retraction of the clot, a normal coagulation time, and reduction in the number of platelets are essential diagnostic criteria. Pre-operative transfusions are advisable. Bedson has shown that complete removal of platelets from the circulation does not induce purpura; damage to the capillary walls is also essential for the experimental production of the disease. Splenectomy can protect an animal from purpura produced by Bedson's serum.

In splenic anæmia, splenectomy is not quite so successful on account of the fact that the cause of the disease has a two-fold effect: (1) anæmia, and (2) congestion of the spleen with an accompanying cirrhosis of the liver. Splenectomy benefits the anæmia, but has little effect on the cirrhosis. Obviously, operation must be performed early in the disease. The author warns that a high platelet count contra-indicates operation. When death occurs it is usually due to hæmorrhage or the advance of the cirrhosis of the liver.

STANLEY H. MENTZER, M.D.

GYNECOLOGY

UTERUS

Ochala, H., and Therkelsen, F.: An Unusual Case of Sarcoma of the Uterus (*Ein seltener Fall von Uterussarkom*). *Haap Tid* 933 p. 415.

In a series of 3,500 uterine curettings, Melchior of the Pathological Institute of the University of Copenhagen found carcinoma in 238 and sarcoma in 2. In a series of 5,055 uterine curettings, Moeller found carcinoma in 302, sarcoma in 7, and carcinosarcoma in 1. Of 1,278 biopieces and tumors removed from the uterus, 323 showed carcinoma, 20 (2.88 per cent) showed sarcoma, and 3 showed carcinosarcoma. Of 5,766 autopsies, only 4 showed that death had been due to sarcoma of the uterus.

The author reports an especially large sarcoma of the uterus which developed in a para-III fifty-three years of age. The patient had passed the menopause at the age of forty-six years. For one year she had noted an increase in the size of her abdomen, and for one week had suffered from abdominal pressure pains. Laparotomy disclosed a cystic tumor arising from the lesser pelvis and extending well up into the abdomen. The neoplasm contained 5 liters of a chocolate-colored fluid. Only the uterus was involved. The adnexa were normal. There was no break in the capsule of the tumor and there were no metastases. Total extirpation was followed by uneventful recovery.

The neoplasm was a large intramural cystic tumor of the uterus. Its greatest diameter was 40 cm. The wall of the cystic cavity was very irregular, firm, and nodular. It presented whitish and grayish-red areas alternating with soft dark purple masses of tissue up to the size of an orange. The tumor did not invade the uterine cavity. Histological examination showed it to be a very cellular atypical leiomyosarcoma with cystic changes, hyaline degeneration, and necrosis.

SARCOMA (G)

ADNEXAL AND PERIUTERINE CONDITIONS

Rubin, I. C.: Twelve Years' Experience with Uterotubal Insufflation; Diagnostic and Therapeutic. *Am. J. Obst. & Gynec.*, 193, xlii, 50.

Insufflation was employed as a diagnostic and therapeutic measure in 2,773 cases of sterility and in 154 cases of other conditions. There were 3,600 insufflations. Genital inflammations, menstruation and the premenstrual phase, abnormal bleeding from the genital tract, pregnancy and severe constitutional diseases were regarded as contra-indications. There were no serious sequelae.

The most favorable time to insufflate the tubes is the postmenstrual phase, from the fourth to the seventh day following cessation of the menses. The

use of a uniform pressure rate flow of gas which definite time limits is essential for safety. Carbon dioxide is the preferred gas because of its rapid absorption. With the aid of the kymograph, the presence of tubal patency, tubal stenosis, peritubal adhesions, and uterotubal spasm can be determined. In the vast majority of cases it is possible to locate the site of an obstruction. A decision for or against operation to open the tubes is thus rendered possible. In this respect, abdominal auscultation and careful notation of the sensory reactions during the examination are important.

The interpretation of the results of insufflation has been confirmed by experimental methods and the findings in 186 laparotomies and 732 examinations with Hplodol. In this connection the author calls attention to the fact that although there were no complications from insufflation in the 132 cases, the use of Hplodol was followed by sequelae in 9 cases. In 3 of the latter there were pelvic abscesses requiring surgical intervention.

Of the 2,193 patients with sterility in whom the condition of the tubes was determined satisfactorily normal patency was found in 947 (43.2 per cent), tubal obstruction of varying degree in 1,245 (56.8 per cent), and complete obstruction in 578 (26.4 per cent).

Following induced abortion the incidence of tubal obstruction was 60.22 per cent, and following appendicitis, 60.46 per cent. Obstruction was found to be associated with fibroids in 57.66 per cent of the cases, and with retroflexion in 65.26 per cent. In 81.94 per cent of cases of extra-uterine pregnancy the residual tube was obstructed.

In patients insufflated during the tenth to the sixteenth day of the menstrual cycle, i.e., at a time when ovulation would be expected to occur the rate and amplitude of contraction and the uterotubal tonicity are increased. In functional anemorrhoea of young women, during the menopause, and after X-ray castration, they are decreased.

Tubal insufflation appears to be of definite therapeutic value in sterility. This is demonstrated by improvement in tubal patency and function during prolonged or repeated insufflation as recorded on the kymograph and by the occurrence of pregnancy after a short interval. Of the 308 women who became pregnant after insufflation, 125 (21.5 per cent) were treated for peritubal adhesions or tubal stenosis. Insufflation may therefore be considered a non-operative method of salpingoplasty. In 57.59 per cent of these women conception occurred during the first six months after insufflation in 42.21 per cent, within two months and in 27.80 per cent, within a month. Of the 244 women with primary sterility who became pregnant, 22.13 per cent had been mar-

ried for over five years before they were treated by insufflation. Of the 154 with secondary sterility who found themselves unable to conceive for five years or longer after their last pregnancy, 44.15 per cent became pregnant after the treatment. In the cases of 12 women, pregnancy occurred after sterility for more than fifteen years. In the cases of 247 (62.06 per cent) of the 398 women who became pregnant, insufflation was the only treatment. Of 57 women with dysmenorrhoea, 66.6 per cent were benefited by the insufflation. E. L. CORNELL, M.D.

Gilardino, E., and Mazzone, G. The Cause of the Ovarian Changes in Hydatiform Mole (Sulla genesi delle alterazioni ovariche nella mola vescicolare). *Riv. ital. di ginec.*, 1932, **xxv**, 273.

Aschheim and Zondek came to the conclusion that the hormones in the urine of pregnant women causing the changes in the ovaries of sexually undeveloped rats on which they base their biological diagnosis of pregnancy have their origin in the anterior lobe of the hypophysis. However, work done by others tends to show that there is a pregnancy hormone originating in the placenta.

The authors made a systematic study of the effect of injections of the urine of pregnant women into guinea pigs. They injected the urine in varying doses and compared the changes brought about in the ovaries with the picture of hydatiform mole. The animals were killed thirty-six hours after the last injection. In all of them the ovaries had increased to five or six times their normal size and showed follicular cysts of varying sizes, some of which contained blood. The authors give a detailed description of the histological changes, which in many respects resembled those of hydatiform mole. On the basis of their findings they state that the pregnancy hormone of even normal women is apparently capable of causing small cysts similar to those seen in hydatiform mole, and that hydatiform mole is evidently caused by an exaggerated production of this hormone. The animals on which they experimented showed also the toxic symptoms that are associated with hydatiform mole and chorionepithelioma.

AUDREY GOSS MORGAN, M.D.

EXTERNAL GENITALIA

Simon, S. Results of Radiation Treatment in Carcinoma of the Vulva (Die Bestrahlungsergebnisse beim Carcinoma vulvae). *Strahlentherapie*, 1932, **xliii**, 273.

The author reviews the statistics of Bueben, Adler, Delporte and Cahen, and Voltz, also those of Radiumhemmet. He classifies carcinoma of the vulva, like carcinoma of the cervix, into four groups. Group 1 consists of the small nodules and the non-ulcerated infiltrations of the labia and clitoris, Group 2, of the larger nodules and localized ulcerations, Group 3, of ulcerated growths which have invaded the neighboring tissues of the vulva, but have remained localized to one side, and Group 4, of

lesions which have extended across to the other side and of recurrences. In Groups 2 and 3 the glands are nearly always enlarged.

The author attempts to give an exact description of the kind of radiation that is used. He describes first the radical form of treatment which aims at complete obliteration of the tumor. This form of radiation is indicated definitely in cases in which complete destruction of the newgrowth can be anticipated. In all other cases it is indicated relatively. Simon describes also palliative radiation for the relief of symptoms and preventive radiation after radical surgical removal of a tumor.

He then reviews twenty-four cases of vulvar carcinoma seen in the period from 1926 to 1930. Of twenty-one, fourteen were suitable for radical radiation. The indications were absolute in three cases and relative in eleven. Two of the patients with an absolute indication for radical radiation are still alive, one after more than three years and the other after more than one year. Of the patients with a relative indication, three are well, one has been well for almost three years and another for more than two years. A prognosis from the histological picture is impossible.

In discussing the technique of treatment, the author states that he prefers the combined radium-roentgen method and has abandoned the radium-needle method. The radium is maintained at a distance of at least 1 cm. from the surface to be radiated. For carcinoma in the region of the clitoris he employs an appliance into which is fitted a plaque-shaped carrier and, with proper filtration, the radium is maintained at the right distance by means of a disk of cork. In carcinoma of the region of the labia the implantation method is satisfactory as long as the tumor is still circumscribed and mobile. In other cases the distance apparatus is employed. Technically, the radiation of carcinoma of the vulva is very difficult. The fact that cures are obtained with very different methods indicates that, not the method itself, but other factors are decisive in the end-results. E. PHILIPP (G).

Bueerman, W. H. Vaginal Enterocoele. A Report of Three Cases. *J. Am. M. Ass.*, 1932, **xcix**, 1138.

A vaginal hernia is formed when a portion of the abdominal contents pushes a peritoneal sac through an opening in the pelvic wall and bulges into the vagina. To seventy-three cases of this condition collected from the literature the author adds three of his own. In the great majority of the cases there was a posterior vaginal hernia. The oldest patient was sixty-seven years of age and the youngest seventeen. The diagnosis is made before operation in fewer than half of the cases. The hernia may interfere with labor, rupture during or independently of labor, or become incarcerated.

The development of the hernia seems to be favored by a congenitally defective cul-de-sac, especially after labor has placed a strain on the openings in the muscles of the pelvic floor.

The symptoms are usually those of a rectocele and are not characteristic. They are relieved by the prone position and aggravated by coughing, straining, and standing. Frequently one or more attempts at surgical correction are made without relief before the nature of the condition is recognized. The hernia may be associated with a rectocele or cystocele; the diagnosis then being especially difficult. A sign not described previously which the author believes is pathognomonic is the passage of peristaltic waves over the surface of the sac when the sac is irritated digitally.

The treatment of the hernia is surgical. Three essentials are isolation of the sac, disposal of the sac, and repair of the defect at the point of egress of the hernia from the abdomen. The variation in the conditions under which vaginal hernia are encountered makes a uniform procedure out of the question. The sac is best isolated by a vaginal approach through the incision commonly employed for the repair of a rectocele or cystocele depending on whether the hernia is posterior or anterior to the uterus. When the contents of the sac are then reduced, the peritoneal lining of the sac becomes apparent. Through the vaginal approach the sac may be disposed of by pushing its contents into the abdomen, ligating the sac high, and excising any superfluous portion. If abdominal section is also contemplated the sac may be pushed into the abdomen with its contents and the repair of the defect made at the same time. After the abdomen is opened, the sac may be everted and sutured to the posterior surface of the uterus or its redundant portion may be excised.

Repair of the defect at the point of egress of the hernia may be accomplished from the vaginal approach by obliterating the cleavage plane through which the hernia emerged. The operation is then completed by approximating the levator ani as in a high perineorrhaphy. The pelvic floor defect may usually be repaired by obliterating the cul de sac of Douglas as in the Monchowitz operation for rectal prolapse. Associated pathological conditions such as uterine displacement may be corrected at the same time. When the vaginal hernia is associated with marked uterine prolapse, vaginal hysterectomy and repair of the hernia may be done at the same time.

HARRY W. FINE, M.D.

Strachan, G. I. Adenocarcinoma of the Vagina. *J. Obst. & Gynec. Brit. Emp.* 33, 1934, 566.

Carcinoma of the vagina is an uncommon condition to which little space is devoted in gynecological textbooks. In some cases the growth may be an epithelioma. This may be primary in the vagina and arise in any part of it, but as a rule an epithelioma represents the direct extension of a cervical epithelioma and under such circumstances is confined to the upper part of the vagina. Adenocarcinoma which is less frequent, may be secondary to carcinoma of the body of the uterus and constitute the first sign of the latter condition. Primary adeno-

carcinoma of the vagina is the rarest of growths. The author reports two cases of this type of malignancy. Both tumors arose from the posterior vaginal wall near the cervix. They had a cauliflower appearance and came away during the course of a digital examination.

Adenocarcinoma of the vagina is of special interest from the standpoint of its origin. The vagina is said ordinarily to contain no glands and produce no secretion. However, some gynecologists have occasionally found glands in the vagina, especially in the fornices. Such glands are usually judged to be misplaced cervical glands, but by some they are regarded as extensions of normal intrauterine mucosa or fragments of the lower part of the Wolffian duct or Gartner's duct.

HARRY W. FINE, M.D.

MISCELLANEOUS

Novak, E.: On Certain Endocrine Factors in Menstruation and Menstrual Disorders, 11th Special Reference to the Problems of Abnormal Bleeding and Menstrual Pain. *Am. J. Obst. & Gynec.* 33, 1934, 378.

Most of what is known concerning the physiology of menstruation pertains to its endocrinology as the fundamental rôle in the mechanism of the process, like that of most other vegetative functions, is played by the endocrine system rather than by the more highly developed nervous apparatus.

The endocrine factors are probably important even in the fetal and prepubertal periods, but at puberty their importance is increased.

Such menstrual abnormalities as excessive functional bleeding cannot be studied merely from the standpoint of endometrial histology or the quantitative hormone content of the blood. A broader viewpoint based on considerations of comparative physiology is necessary. Periodical hemorrhage from the genital canal may be of various types, each with an entirely different mechanism. The most common variety—functional bleeding with hyperplasia of the endometrium—is due apparently to persistence and excess of the follicular secretion with deficiency or excess of the corpus luteum hormone, progesterone. There can be little doubt, however, that this ovarian disturbance is due in turn to imbalance of the governing or hormones of the pituitary gland.

The findings of recent investigations indicate that uterine motility is subject to a definite cyclical influence and that folliculin is in general a stimulator and progesterone an inhibitor of rhythmic uterine contractions. The author therefore advances the view that the pain of primary dysmenorrhea is explainable in part at least, on the basis of these facts. This pain is characteristically of a colicky type, suggesting spasmodic muscle contraction, and begins characteristically a day or two before the onset of menstrual bleeding, i.e. just at the time that the withdrawal of the inhibiting corpus luteum hormone takes place. While psychogenic, constitutional,

developmental, and other factors undoubtedly play a rôle in the production of primary dysmenorrhœa, the immediate cause seems to be a heightened irritability of the uterine muscle. On the basis of this theory, the author suggests a plan of organotherapy combined with measures directed toward the secondary factors mentioned. E. L. CORNELL, M.D.

Novak, E., and Reynolds, S. R. M. The Cause of Primary Dysmenorrhœa. *J. Am. M. Ass.*, 1932, *xcix*, 1466.

Primary (essential) dysmenorrhœa frequently occurs in women whose pelvic organs are quite normal anatomically. The pain begins a day or two before the onset of the menstrual bleeding and is commonly of a colicky, spasmodic character. It has been attributed to the following factors:

1. Mechanical obstruction. The theory that mechanical obstruction is responsible is rarely tenable and is being abandoned. Antelexion is often found in the absence of dysmenorrhœa, and most severe menstrual pain sometimes occurs in women with no antelexion of the uterus or any other gross abnormality. Even at the height of the menstrual pain, a probe can easily be passed into the uterus.

2. Hypoplasia of the pelvic organs, particularly the uterus. Often when the uterus is markedly hypoplastic, as in infantile uterus, there is no menstrual pain. Moreover, primary dysmenorrhœa is often an acquired disorder.

3. Psychogenic factors. Many gynecologists believe that psychic trauma is the basis of the first attack of dysmenorrhœa and that subsequent attacks are the result of anxiety or fear subconsciously associated with the menstrual function.

4. Constitutional factors. It is believed that dysmenorrhœa is often due merely to a decrease of constitutional or nervous stability. Under such circumstances it is often cured by improvement of the general health and proper general hygiene.

5. Endocrine factors.

In conclusion the authors state that whatever the underlying cause of the pain may be, they believe that the immediate cause is a spasmodic contraction of the uterine muscle. Experimental data are cited in support of this theory.

CHARLES F. DU BOIS, M.D.

Salvini, A. A Clinical Study of Appendicitis in Its Relation to Gynecological Affections. (Contributo clinico allo studio dell'appendicite e affezioni ginecologiche). *Riv. ital. di ginec.*, 1932, *xv*, 177.

In 189 gynecological laparotomies done in the Section of Gynecology and Obstetrics of the Municipal Hospital of Alexandria during 1930 and 1931, appendectomy was performed 25 times (in 6 cases of cystic disease, 0 cases of adnexitis, 3 cases of uterine malposition, 6 cases of oophoritis, and 1 case of extra-uterine pregnancy).

Since in many cases the appendix is found diseased on histological examination when it appeared normal grossly, Salvini believes that failure to remove

it is associated with risk. He states that appendectomy is indicated especially when there is a history of previous attacks which may have been due to disease of the appendix. EUGENE T. LEON, M.D.

Sampson, J. A. Pelvic Endometriosis and the Tubal Fimbriae. *Am. J. Obst. & Gynec.*, 1932, *xxv*, 497.

Primary fimbrial endometriosis develops from the activation and differentiation of the tubal mucosa of the fimbriae into a structure resembling endometrium. A similar condition may occur in the mucosa of the ampulla of the tube. These are distinct pathological entities which may be grouped with primary uterine endometriosis (uterine adenomyoma of mucosa origin and adenomyosis interna), primary endosalpingiosis, endometriosis arising from the mucosa of the proximal portion of the tube, postoperative endometriosis continuous with the uterine mucosa and postsalpingectomy endosalpingiosis continuous with the tubal mucosa. They should not be grouped with the various forms of misplaced müllerian mucosa not in continuity with the mucosa lining the uterus and tubes.

Misplaced müllerian tissue derived from tubal mucosa should be designated as endosalpingeal, but when it becomes differentiated into a structure resembling endometrium, the author is tempted to call it endometrial.

Primary fimbrial endometriosis may invade or spread over the surfaces of the walls of the tube and mesosalpinx. When it arises in ovarian fimbriae it may involve the ovary also and cause endometrial cysts of that organ. This differentiated mucosa reacts to menstruation, and since it is exposed (unencapsulated) to the peritoneal cavity, menstrual blood carrying bits of müllerian tissue readily escapes into the pelvis. It is probable that primary endometriosis may arise in any part of the fimbrial mucosa. It has developed in the terminal portion of this mucosa at or near the mucoserosal junction.

Trauma and repair of injured tubal mucosa constitute important factors in the etiology of endometriosis at the mucoserosal junction of tubal fimbriae and in and about salpingectomy stumps.

A study of conditions other than endometriosis which are often present at the mucoserosal junction indicates that epithelium is sometimes disseminated from the terminal portion of the fimbrial mucosa by certain reactions the cause of which is not clearly evident.

At times, uterine and tubal epithelium escape through patent tubes from müllerian mucosa, a tissue which frequently possesses the invasive traits of cancer. Sometimes endometriosis is brought about by the activation of tubal and uterine epithelium by trauma and repair (tubal stumps, mucoserosal junction of the fimbriae, and incised wounds of the uterus).

The general laws governing the healing of wounds of the various structures and organs are the same whether the wounds are caused by the surgeon or

by disease. A comparative study of peritoneal endometriosis and peritoneal carcinomatosis revealed in each condition the histological structure of the parent tissue from which the condition had arisen (muellerian mucosa in one instance and cancer in the other), and demonstrated that not only the histological pictures of the various stages in the development of the peritoneal lesions but also the end-results of the two conditions are similar. These observations suggest that the fundamental method of origin of the secondary growths is the same in both.

E. L. CORRELL, M.D.

Dogliotti, V.: The Use of the Mikulicz Drain in Gynecological Abdominal Surgery (*Considerazioni sull'uso del drenaggio alla Mikulicz nella chirurgia addominale ginecologica*). *Riv Ital di ginec.* 1938 XI, 290.

Mikulicz drainage has been the subject of considerable discussion. Some surgeons are very much opposed to its use. After describing the technique employed in the Gynecological Clinic at Genoa,

Dogliotti reviews sixty-eight cases in which it has been used since 1925. The latter were cases of chronic adnexitis with adhesions, pyosalpinx, extrauterine pregnancy, fibroids of the uterus, and total hysterectomy. Of eighteen patients seen after three or more years, eversion was found in only two.

The objections that have been raised to Mikulicz drainage are that it frequently causes eversion and postoperative hernia, sometimes causes intestinal fistula, and occasionally causes ileus. The author thinks these complications are due chiefly to defective technique. He believes that when Mikulicz drainage is used in properly selected cases it protects against infection.

The time required for complete closure of the abdominal wound ranges from twenty-one to thirty-nine days. The method is indicated particularly for controlling capillary hemorrhage, obliterating dead spaces formed by the amputation of large retroperitoneal or intraligamentary tumors, and cases in which complete peritonization of the operative field is impossible. ALBERT GOW MORGAN, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Baird, D. The Upper Urinary Tract in Pregnancy
Lancet, 1932, CCXXX, 983

In a detailed study of the upper urinary tract in pregnancy in which he compared the findings of clinical, urological, and postmortem examinations, Baird found that dilatation is more common and more marked in the right urinary tract than in the left and more marked in primiparæ than in multiparæ. In 48 of 102 autopsies the distortion was of the type which he regards as characteristic of pregnancy. This was an asymmetrical dilatation in which the right ureter was dilated, elongated, and kinked above the brim of the pelvis. The most common site of kinking was at the junction of the upper and middle thirds. On the left side some dilatation was usually present, but was more uniform throughout the length of the ureter, extending down to the bladder.

In 14 multiparæ who died of toxæmia there was no dilatation of the ureters. The author attributes this fact to the prevention of ureteral atony by an over-production of hormones of the posterior lobe of the pituitary gland in the toxæmias of pregnancy. Examination shows that in the later months of pregnancy the ureter may be compressed between the uterus and psoas muscle, and that obstruction at the pelvic brim is more frequently due to physiological causes on the right side than on the left side. In a comparison of the dilatation in the later months of pregnancy with the dilatation produced by an ovarian cyst of the same size and in same position as the pregnant uterus, it was found that the dilatation produced by the cyst was much less and accompanied by very little atony and much less frequently by kinking of the right ureter.

By chromocystoscopy the author determined that delay in the appearance of the dye was more apt to be due to dilatation of the ureter with stasis than to a decrease in renal excretion. The dilatation with stasis began in the fourth month, reached its maximum in the fifth and sixth months, and then decreased toward term.

A close relationship was noted between the time of the onset of stasis and the onset of the so-called pyelitis of pregnancy. In 70 per cent of the cases studied the pyelitis occurred between the fourth and sixth months of pregnancy in primiparæ. In multiparæ, the time of onset of the stasis and pyelitis was much more variable. Both the stasis and the infection were more marked in primiparæ. The incidence of premature delivery, either spontaneous or induced, was twice as high in primigravidae.

On the right side the dilatation usually affected the kidney pelvis and calyces, whereas on the left

side it was more often confined to the ureter. When there was considerable dilatation of the calyces, interference with kidney function was usually shown by intravenous pyelography.

The author believes that pyelitis with toxæmic symptoms is apt to be wrongly diagnosed unless a careful microscopic examination of the urine is made. He advocates frequent use of ureteral catheters when there is ureteral obstruction due to blockage or kinking. He has found that drainage by catheter improves the kidney function.

The treatment of the pyelitis of pregnancy is described in detail. ALBERT W. HOLMAN, M.D.

Wilkinson, J. F. Pernicious Anæmia of Pregnancy. *J. Obst. & Gynec. Brit. Emp.*, 1932, XXXIX, 293.

Wilkinson discusses true primary or pernicious anæmias of the megaloblastic type with a high color index. He distinguishes two types: (1) the pernicious anæmia of pregnancy, and (2) primary pernicious anæmia with pregnancy. The first type is due directly to pregnancy and may come on at any time during pregnancy or the puerperium. The second type is not due to pregnancy, but may be noticed first when an added strain is placed on the hæmatopoietic system by pregnancy or may develop during pregnancy in a woman with a familial tendency to it.

The pernicious anæmia of pregnancy is considered most serious when it comes on after delivery. It is characterized by extreme pallor, a yellowish tint of the skin, weakness, dyspnoea, and nausea, and is occasionally accompanied by vomiting, soreness of the tongue, and diarrhoea. Frequently there is œdema of the limbs and face. On account of the œdema and the fact that albuminuria may occur, the condition must be differentiated from nephritic toxæmias. This is accomplished by a study of the blood. In the pernicious anæmia of pregnancy the blood shows a marked reduction in the number of red cells with a less marked decrease in the hæmoglobin and a color index greater than 1, a slight increase in the number of leucocytes, anisocytosis, abnormal staining, megaloblasts, and normoblasts, and no change in the number of blood platelets. There is no abnormality of gastric secretion comparable to the achylia occurring in true pernicious anæmia, and there are no changes in the central or peripheral nervous system. After blood transfusion remission is rapid and usually permanent. The prognosis, which was poor before the use of blood transfusion, is now good for both the mother and the child if the condition is recognized early enough.

True pernicious anæmia is characterized by achylia, gastric and neurological symptoms in addition

to the symptoms described. When the condition was present before the onset of pregnancy it becomes progressively worse as the pregnancy progresses.

The treatment of both types of pernicious anemia is the same. In Wilkinson a case blood transfusion is used to carry the patient over the acute stages and is supplemented by the use of desiccated hog's stomach, 1 oz. of which, given daily, is sufficient to produce a substantial increase in the blood count and the hemoglobin. In cases in which blood transfusion is impossible because of auto-agglutination, liver extracts are administered intravenously. In the pernicious anemia of pregnancy treatment need be given only during the pregnancy and the puerperium, but in true pernicious anemia it must be continued indefinitely.

ARTHUR H. KLAUW, M.D.

Tessaro, G.: Myomectomy and Rupture of the Uterus (Mioectomia e rottura d'utero). *Arch. di med. e chir.*, 1931, LXIX, 243.

The case reported was that of a woman twenty three years of age who had been subjected to myomectomy two years previously. The rupture of the uterus occurred suddenly during pregnancy without prodromal symptoms. Operation was performed immediately. The fetus was found in the peritoneal cavity. The uterus had contracted so that severe hemorrhage had not occurred. Hysterectomy was followed by uneventful recovery.

The rupture occurred at the site of the myomectomy scar. Histological examination of the uterine wall at this point revealed a thin scar with diffuse replacement of the muscle fibers by connective tissue. Decidual cells were found between the muscle fibers. The presence of decidual cells in the already thin scar probably led to further weakening of the uterine wall at this point. As the placenta was inserted upon the wall opposite the myomectomy scar infiltration of the scar by chorionic villi did not occur.

The author reviews the literature and presents the various theories regarding the pathogenesis of rupture of the uterus. He states that accurate suture of the uterine wall following myomectomy may result in a firmer scar and better uterine function. During delivery the obstetrician should direct his attention to the uterine scar as rupture of the uterus may occur without the classical symptoms and with only slight pain.

PETER A. ROWE, M.D.

LABOR AND ITS COMPLICATIONS

Daniels, E. A.: Dyastocia Dyspituitarism. *J. Obst. & Gynec. Brit. Emp.*, 1931, XXXIX, 572.

Daniels describes a type of labor which is prolonged and difficult because of a pituitary disturbance instead of uterine inertia or occiput-posterior position of the fetus. As the woman with this condition does not show any cretinoid characteristics, the secondary sexual characteristics are fully developed. Whether or not she is a purely pituitary type may

be open to question, but she nevertheless presents many of the signs of hypopituitarism. She has a characteristic appearance. She is of short stature (about 5 ft.) her head is close to her chest, she has a heavy deposit of fat around her pelvic girdle, her hips are quite broad, and her face is plump. Her hands are small and chubby but the fingers are not fat or sausage shaped. The radius, ulna, tibia, and fibula are shortened considerably and are out of proportion to the fairly normal length of the humerus and femur. The feet are small. As a rule there is good vulvum. The menstrual flow is usually established late in adolescence. The menses run easily and shows hypotension with a slow pulse. She is of a psychoneurotic nature and subject to the toxemias of pregnancy. The vaginal introitus is very small, and the pelvic floor has little elasticity. The obstetrical measurements are normal. An outstanding characteristic is heavy pelvic bones. The pubic ramus are heavy and masculine, and the tubercles of the ischia are thick and bulging.

Labor begins with good contractions which are regular and forceful, but after from fifteen to twenty hours of such contractions the dilatation is still very small. The author does not recall an anterior position of the fetus in cases of this type, but oblique arrest and impaction are common. The cervix remains rigid, and oxytocics are of no value. Spontaneous delivery may occur, but is rare. The woman soon becomes exhausted. The incidence of stillbirth and perineal morbidity is high.

The author advises that the patient be sent to a hospital and given a test of labor. If after from ten to fifteen hours no progress is being made, cesarean section should be done.

Three cases are reported in detail.

J. TACKERMAN WATKINSON, M.D.

Davis, M. L.: Breech Presentation. *Surg. Clin. North Am.*, 1931, XII, 191.

Of 35,000 women delivered on Davis service at the Chicago Lying In Hospital, breech presentation occurred in 1,478. Its incidence was therefore 4.2 per cent. This frequency is probably explained by the fact that many of the women entering the hospital are referred because of complications. Any factor interfering with the accommodation between the fetus and the mother's pelvis may result in breech presentation.

In the 1,478 cases of breech presentation the corrected mortality was 6.7 per cent. The author attributes the increased death rate to several causes, including misjudgment of the degree of disproportion between the aftercoming head and the pelvis and complication of the mechanism of labor by the obstetrician. Operations to terminate labor had a high fetal mortality. Prolapse of the cord was common because of incomplete filling of the inlet by the breech. Other factors increasing the mortality were incomplete effacement and incomplete dilatation of the cervix. The babies died chiefly from cerebral damage, intracranial hemorrhage, tears of

of the fetal skull. The head is easily extracted by pressure on the fundus and at the sides of the incision.

The incision is closed by sutures introduced from a central point alternately and symmetrically toward body ends. Care must be taken that the sutures in the serous surfaces are placed somewhat higher than those in the uterine wall.

In atypical conditions the transverse incision yields sufficient space and facilitates the extraction of the head. The use of forceps is seldom necessary. The chief objection to the method is the possibility of lessening the resistance of the uterine wall in later pregnancies. However in almost every case there is complete muscular regeneration at the site of the incision although the wall is somewhat thinner in that region. Good repair of the wound requires exact approximation of the margins, good hemostasis, and asepsis. Good hemostasis in the operative field is particularly important to prevent hemorrhage due to inertia following extraction of the membranes.

The types of incision are shown in two plates, and the article is supplemented by an extensive bibliography.

A. R. TART, M.D.

Conka W. R.: Contra-Indications to Cesarean Section. *J Am Med Ass* 1933, xxx, 1843.

In the practice of well qualified obstetricians the incidence of cesarean section rarely exceeds 3 per cent of all deliveries, but in the practice of obstetricians not well qualified, it is 10 per cent or more.

The contra-indications to cesarean section are (1) the presence of actual or potential infection in the genital tract (2) the absence of valid indication for the operation and (3) the convulsive stage of eclampsia.

Cooke draws the following conclusions:

1. Most fatal cesarean sections of today are performed in the presence of contra-indications.
2. Pain, fatigue, fear and the safety of the child are rarely to be considered as excuses for cesarean section.
3. Proper conduct of labor and the test of labor will eliminate most cases of potential infection.
4. The properly conducted test of labor analgesia and an adequate allowance of time will eliminate most of the supposedly necessary sections.
5. Even in unskilled hands, the procedures alternative to cesarean section have a total maternal mortality risk from shock, hemorrhage, and infection which is less than that of cesarean section performed in the presence of contra-indications.

ROLAND S. COOKE, M.D.

PURPERIUM AND ITS COMPLICATIONS

Garcia, F. P. P.: The Arterial Tension in Puerperal Infection. (*La tensión arterial en la infección puerperal*). *Semanas med.*, 1932, xxxi, 23.

The author calls attention to the tendency of puerperal infection to affect the blood pressure by

attacking the cardiovascular and nervous system and the blood-forming organs. He reviews the blood pressure findings in the cases of 40 women with a normal puerperium and 365 women with puerperal infection. The pressure readings were made with the sphygmomanometer of Fichon with the modification of Gellavardin. In the cases of the women with a normal puerperium the blood pressure remained well within the normal limits. The cases of infection included fever due to suppuration, septic endometritis, total metritis, parametritis and septic salpingitis, septicemia, and pyemia. From the study of these cases the following conclusions are drawn:

1. Hypotension predominates in puerperal infections because of the dysfunction of the neurovegetative system and the dystonia of the cardiovascular system. It varies according to the stage and type of the infection.

2. In cases of infection which is definitely localized in the genital tract, hypotension is the rule and hypertension the exception. When the infection and intoxication are very advanced, hypotension is constant and hypertension does not occur.

3. When there is a more or less rapid and progressive fall in the pressure due to a general vasodilatation, the prognosis is unfavorable.

4. In the localized forms of infection, hypotension depends more on the extent of absorption than on the severity of the infection.

5. In prolonged puerperal infections the hypotension is the primary result of the infection, to which is added intoxication due to lack of sufficient nourishment and protein starvation, changes in the blood, and dehydration from vomiting and diarrhea.

6. In the acute septicemias a cardiovascular asthenia is present from the beginning, whereas in the pyemias the vascular dystonia is primary and the cardiac failure occurs later.

7. Arterial pressure and the pulse rate are physiological constants which maintain a certain correlation and equilibrium and in puerperal infection appear to be seriously affected by the toxic-infectious elements.

WILLIAM R. TORRESANO, M.D.

Larsenetti, F.: Contribution to the Prophylactic Treatment of Puerperal Fever. (*Contributo al trattamento profilattico della febbre puerperale*). *Clinical* 1932, xxx, 333, 453, 530.

The author first cites an article on the treatment of vulvar abrasions and ulcerations published by him in 1930 in which he said that the development of an infective process in the presence of such lesions depends on the following three factors: (1) the entrance of bacteria, (2) the virulence of the bacteria, and (3) the resistance of the body.

The bacteria found in the vagina under normal conditions are the gram positive bacilli commonly known as Döderlein bacilli. These micro-organisms form lactic acid which serves as a defense against the invasion of other bacteria. During normal pregnancy they are increased in number because the secretions are increased. Any factor which disturbs

the normal bacterial flora increases the danger of infection

Of great importance in the prophylaxis of puerperal infection is proper treatment of any anatomical, pathological, and functional abnormalities of the genital tract which may be present before pregnancy begins. During pregnancy, the woman should be kept away from diseased and infected persons. Extreme cleanliness of her body, clothing, and bedding is important. Many physicians prohibit sexual intercourse during the last months of pregnancy. Rectal examination is inadvisable as it increases the possibility of contamination of the external genitals. It should be done only when vaginal examination is definitely contra-indicated. The steps in the method of disinfection used by obstetricians in the author's clinic are as follows:

- 1 Cutting and cleaning of the fingernails and rolling up of the sleeves
- 2 Washing of the hands and forearms for ten minutes in running water with a brush and soap
- 3 Disinfection with a 3 per cent solution of iodine for two minutes

The person who prepares the patient for examination should not also make the examination. The examiner should wear a white coat during the examination and should not have been in contact with an infected person during the preceding forty-eight hours.

During labor, the precautions to insure asepsis should be even more rigorous as at this time the reaction of the genital canal changes from acid to alkaline, the defensive bacteria therefore becoming fewer and the liability to infection by pathogenic bacteria becoming greater. The author condemns the practice of preparing the patient on the bed where delivery is to occur, and calls attention to the danger of assisting at delivery after having assisted in a case in which infection was suspected. Care must be taken to use only instruments that have been properly sterilized and to avoid all unnecessary vaginal exploration.

Detachment of the placenta should not be hastened in any way as it is important to avoid provoking irregular uterine contractions which may result in retroplacental hæmorrhage and atony of the uterine muscle with retention of fragments of membrane or the formation of large thrombi which provide a favorable culture medium for infecting bacteria. For the same reason care must be taken to assure the complete expulsion of the placenta.

Expulsion of the placenta should be followed by the repair of lacerations, suitable treatment of abrasions, thorough irrigation of the external parts with sterile water, and the application of a sterile dressing.

If the lochia remain free from pathogenic bacteria, internal treatment should be avoided for the first four days. Extreme cleanliness of the patient and her bedding is necessary after delivery as well as during pregnancy and labor. The time the patient

should be allowed to get up is of importance. If she is allowed to get up too soon, the auto-sterilization of the uterus which normally occurs between the fourth and tenth days may be disturbed because asepsis is more difficult to maintain when the patient is out of bed.

When the protective activity of the bacteria normally present in the vagina is so reduced as to permit the multiplication of streptococci or staphylococci, it is necessary to determine the character of the bacteria in the genital canal in order that measures may be taken to modify it and increase the natural means of defense. When this determination has been made, irrigation of the vagina with sodium bicarbonate to remove the mucous secretions and with a solution of aluminum and potassium sulphate to lessen secretion may be done. Only carefully sterilized instruments should be used. Irrigation with lactic acid has not given satisfactory results, but the injection of from 5 to 15 c.c. of an active culture of lactic-acid-forming bacteria immediately after the irrigation has been found effective. The treatment should be repeated once or twice daily, if necessary, until the flora becomes normal. Vaccines and sera are of value to stimulate humoral immunity. They may be given subcutaneously, intramuscularly, or intravenously in doses corresponding to the sensitivity of the patient. Anatoxins may be employed in association with vaccines. To obtain tissue immunity, an antiviral may be applied directly to the tissues. After it has saturated the tissue cells it may pass into the circulating blood and confer immunizing power on the blood serum.

A. E. TAFT, M.D.

Le Lorier, V. *The Prophylaxis and Treatment of Colon Bacillus Infections During the Puerperium* (Prophylaxie et traitement des colibacillooses de la puerpéralité). *Revue française de gynécologie et d'obstétrique*, 1932, xxvii, 276.

Pregnancy not infrequently aggravates a colon bacillus infection which has been present unrecognized sometimes since infancy. The most important cause of colon bacillus infections during infancy is impure milk. Intestinal parasites which damage the intestinal mucosa provide portals of entry for the organisms into the general circulation and are responsible especially for genito-urinary and biliary complications. Pregnancy interferes mechanically with intestinal and urinary function, thereby aggravating pre-existing pathological conditions. Phlebitis and septicæmia may result from blood-stream contamination by the colon bacillus.

Prophylaxis depends upon maintenance of normal gastro-intestinal and renal function and measures to increase the resistance of the body against the colon bacillus. Gastro-intestinal function may be regulated by a dietary regimen supplemented by the administration of mineral oil. The urinary output must be controlled quantitatively as well as qualitatively. Mineral waters are of value for their diuretic effect. Urotropin is a satisfactory urinary antiseptic. Im-

munity may be increased by colon bacillus vaccines given by mouth. In urinary infections, medical treatment should always be tried first. Urethral catheterization should be resorted to only when medical treatment has failed. Evacuation of the uterus may relieve even the most severe pyonephrosis, but as a rule nephrectomy is necessary when the infection has reached this stage.

HAROLD C. MACK, M D

NEWBORN

Bar P: Clinical Observations on the Anti-Tubercular Vaccination of the Newborn Child with Bacillus Calmette-Guérin. *J Obst & Gynec Brit. Emp* 1932 xxxix, 307

The failure of the tuberculin test to cause a positive reaction in the cases of tuberculous infants is explained by the fact that the infection is due to an ultramicroscopic filtrable virus against which the weakened infant has no immunity. To produce immunity to tuberculosis the author advises inoculation with the Calmette-Guérin bacillus. This is the ordinary tubercle bacillus attenuated by successive growth on a bile-potato culture medium.

Three methods of administering the bacillus are described and discussed—the oral, the subcutaneous, and the intraperitoneal. The oral method gives

good results, but yields them comparatively slowly. The subcutaneous method gives good results more quickly than the oral method, but may produce cold abscesses which, while not serious, may require puncturing. The intraperitoneal method is of no practical value.

Immunity is produced most easily if the child is isolated from all possible sources of tuberculous infection for at least a month.

The author has found by numerous tests that the attenuation of the Calmette-Guérin bacillus is fixed. As a rule there is no danger in the use of this bacillus even in the presence of intercurrent infections. However there are reports of a few cases in which death was attributed to the method.

After the oral administration of the bacillus there are usually no symptoms, but in some cases diarrhea and loss of weight may occur. After the subcutaneous administration of the bacillus there may be a local rash. Polyadenitis and abscess formation may occur as late sequelae, but have not proved serious. The pus from the abscesses does not cause tuberculosis in guinea pigs.

From statistics and experiments on animals the author concludes that the use of the Calmette-Guérin bacillus increases resistance and modifies any subsequent infection so that it occurs in only a mild form.

HENRY S. ACHES, Jr M D

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Pupini, G. Sixteen Cases of Nephritic Hæmaturia Treated Surgically (Considerazioni su 16 casi di nefrite ematurica trattati chirurgicamente) *Arch ital di urol*, 1932, ix, 97

The author found 16 cases of the supposedly unusual nephritic hæmaturia in a series of 300 cases of hæmaturia which, because of the severity of the bleeding, were subjected to surgical intervention after varying periods of unsuccessful medical management. He presents a brief résumé of these cases.

The condition occurred with equal frequency in both sexes. In most of the cases its onset was insidious, but in some it was acute. As a rule it was preceded by an infection. The duration of the symptoms varied from several weeks to twenty years. In 4 cases pain was absent. In 2, there was lumbar pain, and in 7 there were painful crises. In the majority of the cases there was no disturbance of urination. Physical examination revealed little except the hæmaturia. In the diagnosis it is necessary to rule out stone, tumor, and tuberculosis.

Of 9 cases treated by decapsulation, a clinical cure was obtained in 3, noteworthy improvement in 2, slight improvement in 1, a good symptomatic result in 1, and no change in 2. The observations on which these conclusions are based were continued over a period of from six to ten years. Of 7 cases in which nephrectomy was done, a complete cure resulted in 3, marked improvement in 1, moderate improvement in 2, and death in 1. The author concludes that the radical treatment offers the best prospect for a good result.

A. LOUIS ROST, M.D.

MacKenzie, D. W., and Ratner, M. Tumors of the Renal Pelvis. *J. Urol*, 1932, xxviii, 405.

Only from 5 to 7 per cent of renal tumors occur primarily in the renal pelvis.

From 40 to 50 per cent of tumors of the renal pelvis are papillomata. These tumors are usually multiple villous or wart-like growths similar to those found in the bladder. They are very vascular and bleed easily. They are usually quite benign, but have a tendency to become malignant. They have a tendency also to produce transplants along the course of the ureter even as far down as the bladder.

From 20 to 30 per cent of growths of the renal pelvis are papillary epitheliomata. These also are wart-like tumors, but appear more compact and involve a greater area than the simple papillomata. The villous processes very often show areas of ulceration. In the early stages there is definite involvement of the submucosa and later there is encroachment on the renal parenchyma.

Other tumors found in the renal pelvis are the alveolar carcinoma, which is probably a far-advanced papillomatous growth that has lost its papillomatous character, squamous carcinoma, and histoid growths. Histoid growths, which include the fibroma, adenoma, and sarcoma, are extremely rare.

As a rule all of the tumors spread very rapidly.

In the majority of cases on record the tumors appeared between the ages of forty and sixty years. They are more common in males than in females. Chronic infection of the renal pelvis seems to be an important factor in their development.

The most outstanding sign of a tumor of the renal pelvis is hæmaturia. Next most common is pain, and third most common the presence of a palpable tumor. Other signs are the passage of tissue in the urine, loss of weight and strength, and various urinary symptoms.

The malignant papilloma has a better prognosis than the other malignant growths. Its metastases occur late and are usually not widespread. The most malignant tumor is the squamous-celled carcinoma. This metastasizes early and very extensively.

On account of the tendency of tumors of the renal pelvis to extend down the ureter, the treatment of choice is nephrectomy and complete ureterectomy.

The authors report a case of malignant papilloma of the renal pelvis.

JACOB S. GROVE, M.D.

Garofalo, F. Retroperitoneal Tumors Called Paraneoplasms (Di quei tumori retroperitoneali denominati paraneoplasmi) *Arch ital di urol*, 1932, ix, 243.

Garofalo reports two cases of retroperitoneal tumor in close relationship to the lower pole of the kidney. Careful histological examination demonstrated that both of the neoplasms had their origin in the suprarenal tissue. In the first case, that of a child three years of age the tumor was a sympatheticoblastoma with the structure of tumors of the parasympathetic organs and arising, like the suprarenal medulla, from the neuro-ectoderm. In the second case, that of a man sixty-eight years of age, the tumor presented the structure of a hypernephroid renal tumor and like the latter was derived from an ectopic interrenal organ situated below the lower pole of the kidney. The neoplasms were diagnosed clinically as renal tumors. They were removed by the extraperitoneal route with conservation of the kidney.

Bonnet. Extravesical Ureteroceles (Les ureteroceles extravésicaux) *Arch d'anal et d'organes génito-urinaires*, 1932, vi, 626.

By the term "extravesical ureterocele" the author means a cystic dilatation of the lower end of the ure-

ter which first protrudes into the bladder and then prolapses through the urethra. He reports eight cases collected from the literature. The first case was reported in 1835 by Sechler but the first case diagnosed before operation was reported in 1927 by Jeunebrun.

All of the cases have been those of females. In the male, extravasical prolapse of the ureter is impossible on account of the narrowness of the urethra. In six of the cases reviewed by the author the ages of the patients ranged from fourteen to fifty-two years. In two of ten cases, pregnancy and labor were thought to be factors. In some of the cases the tumor prolapsed from the urethra following violent effort such as sudden forced urination, coughing, or straining at defecation.

According to Hartmann, an essential condition for the occurrence of cystic dilatation of the lower end of the ureter is partial stenosis of that portion of the ureter. According to the theory of Groggich, obstruction of the lower end of the ureter causes an hour glass deformity and the lower portion of the hour glass forms a hernia into the bladder and becomes a ureteral cyst. The cyst is formed at the expense of the anterosuperior wall with the menses above. Ultimately a pedicle is formed and the orifice is completely obstructed by the weight of the tumor. In the course of distention of the bladder by urine the tumor may sometimes be raised and the obstruction due to the pressure may be relieved, but when the obstruction persists the tumor is pushed into the ureter and appears at the urethral meatus.

The tumor ranges in size from that of a nut to that of a turkey egg. Its appearance varies according to whether it has undergone strangulation or not. When it is not strangulated it is a reddish semitransparent neoplasm, whereas when it is undergoing necrosis it is grayish or dark purple. It is freely movable. Its consistency suggests that it is filled with fluid. It has a pedicle which varies in thickness from that of a lead pencil to that of a finger. A sound may be passed completely around the pedicle without meeting an obstruction, and through the vagina the pedicle may be felt as a cord extending toward one of the angles of the trigone. Puncture will withdraw urine whereas in prolapse of the bladder it withdraws only a little blood.

Microscopic examination shows that the outer wall is composed of bladder mucosa and the inner wall of ureteral mucosa. Between the two mucous layers there are remnants of muscular tissue.

Before the appearance of the tumor at the urethral meatus the usual symptoms are pain on urination, frequency, incontinence, urination in intermittent spurts and hematuria. Sometimes there is pain in the kidney region. Cystoscopic examination reveals intravesical cystic dilatation of the lower end of the ureter. After the tumor has become extra-urethral the symptoms mentioned are more marked.

When the prolapsed tumor is necrotic, spontaneous amputation may occur. In some cases the tumor has become reduced spontaneously but as a

rule the reduction was not maintained. In many cases the condition has been complicated by ascending ureteral infection and pyonephrosis.

The prognosis for life is good. In the cases reviewed by the author there were no deaths from the condition. With regard to the prognosis for function there is no information based on autopsy studies, but Bonnet believes that the kidney of the cystically dilated ureter must undergo a marked change due to hydro-ureter and hydrocephalus or to infection of the retained urine.

In the differential diagnosis it is necessary to rule out tumors of the vagina, pedicled polyps of the ureter and prolapse of the bladder.

Curative treatment is surgical. The following procedures have been used:

1. Strangulation of the pedicle by a slip knot. Bonnet believes that this is dangerous.

2. Resection of the pouch at the level of the meatus with hemostasis in the area of section and replacement of the pedicle in the bladder. This procedure may give excellent results and has the advantage that it does not require much surgical equipment.

3. Suprapubic cystostomy followed by resection of the pouch close to the wall of the bladder and covering of the site of section with urethrovaginal mucosa. This is the most satisfactory procedure.

JAMES B. MACOE, M.D.

BLADDER, URETHRA, AND PENIS

Boyd, B. L.: Nephrostomy and Nephrectomy in Carcinoma of the Bladder. *J. Am. M. Ass.* 1933, xlii, 236.

Boyd calls attention to the value of nephrostomy as a means of diverting the urine, improving kidney function, and lessening the injurious effects of infection preliminary to radical operation for carcinoma of the bladder and as a palliative measure in cases of carcinoma of the bladder which is inoperable. The disadvantages of the procedure have been due to the lack of a satisfactory tube and urine collector and the use of an operative technique which did not prevent hemorrhage or leakage of urine about the tube. Both of these disadvantages have been overcome by the technique reported by Cabot last year. Boyd emphasizes the frequency and importance of urinary obstruction in carcinomas of the bladder which can be prevented by nephrostomy. He states that ureterostomy has many disadvantages, and that transplantation of the ureters is much more unsuitable in cases of carcinoma than in cases of ectrophy of the bladder.

ANDREW McNALLY, M.D.

Barbillion, P.: Non-Gonococcal Urethritis. Diagnosis, Etiology and Treatment (Les urethrites non gonococciques. Diagnostic, étiologie, traitement). *J. d'uról. méd. et chir.* 1914, xxxiv, 177.

Non-specific urethritis is about as common, less so important, as gonorrheal urethritis. The t o

conditions are continually confused, much to the detriment of the patient. The non-specific infections are for the most part benign, but occasionally give rise to serious complications. They may even be contagious.

To establish the absence of gonorrhoeal infection is a relatively simple matter. The difficulties begin when the attempt is made to determine the cause of the urethritis and to choose the proper treatment.

The general clinical characteristics of the condition are an insidious onset, a little secretion and a few shreds preceding the urethritis by several days, and the presence of only slight, if any, urethral pain. In about 30 per cent of cases the condition develops without a previous urethral infection. In the remainder it is the sequel of gonorrhoea. The urethritis is often extremely tenacious and frequently recurs. Therefore the patient is prone to develop neuroses.

In the presence of a supposed non-specific urethritis it is necessary to establish the absence of the gonococcus, the location of the urethritis, and the cause or causes. A thin, white curd-like discharge is suggestive. Recourse must always be had to microscopic examination, often after activation by beer and Vichy water. After a beer test the organisms should be demonstrated easily. Two or three are insufficient. In the author's opinion, an attenuated or latent gonorrhoea is rare. Cultures are unreliable because there are several organisms which closely resemble the gonococcus.

Practically (although theoretically unsound) it is of value to divide non-specific urethritis into infectious and non-infectious forms. In the latter there are mucus, epithelial cells, and leucocytes. Bacteria are rare or absent. In the infectious forms there are, in addition, bacteria of one or more varieties which are intracellular and extracellular. This distinction is of fundamental importance in the treatment.

In nine cases out of ten the urethritis is entirely anterior.

The most common non-bacterial form is the simple postgonorrhoeal catarrh. This usually subsides spontaneously if the treatment is stopped and the usual causes of urethral irritation are removed. Successful abortive treatment may be followed by a chemical urethritis. Traumatic urethritis includes urethritis caused by a retention catheter, instrumentation, prolonged sexual excitation, sexual excesses, and motorcycling. In some cases the cause is irritation due to concentration of the urine by a high external temperature or high fever, alimentary intoxication, irritation from ingested substances such as highly seasoned food (shellfish, asparagus, game, alcohol, cider, beer, and Vichy water) or drugs (cantharides, potassium iodide, phosphoric acid), or urinary crystals. Urinary crystals may even cause hæmorrhages. Among the general causes of urethritis are diabetes, influenza, typhoid, malaria, mumps, herpes, and rheumatic fever.

The bacterial forms are caused by an immediately preceding gonorrhoea, stricture, narrow meatus, or bacilluria. The tuberculous urethritis described by

Ricord is usually associated with tuberculosis of the prostate and seminal vesicles. Hard and soft chancres of the urethra are possibilities to be considered.

Complications are most frequent in staphylococcal and bacillus coli infections. They are prostatitis and epididymitis. The latter is usually mild and of only a few days' duration. However, subacute and chronic types occur and are difficult to differentiate from tuberculous epididymitis.

Apart from general measures, the treatment depends upon the type of the urethritis. In the non-infectious type the urethral mucosa must be respected. The author recommends anterior irrigations every other day with an isotonic solution such as a 0.75 per cent solution of sodium chloride, or a 0.25 per cent solution of magnesium chloride, or a 0.2 per cent solution of ichthol. Janet suppositories (10 per cent zinc oxide) may be placed in the posterior urethra. If these measures fail, irrigation with albargine solutions of gradually increasing strength (0.015 to 0.025 per cent) may be done. Postgonorrhoeal urethritis usually subsides without treatment. If it does not, the treatment described should be given.

The infectious types of urethritis require irrigations with active antiseptics such as a 0.015 to 0.025 per cent solution of oxycyanide of mercury. Gonorrhoeal vaccine may be of value. When there is a bacilluria, hexamethylenamine is indicated. If the urethritis is definitely chronic, urethroscopic treatment (fulguration of polyps, bullous oedema, and granulations) is often necessary. For stricture, prostatitis, and epididymitis, the author recommends the usual treatments. ALBERT F. DE GROAT, M.D.

GENITAL ORGANS

Collings, C. W. Transurethral Electrosurgery for the Relief of Prostatic Obstruction. *J. Urol.*, 1932, LXXIII, 529.

The results of operation upon 150 patients during the past nine years by the transurethral use of the radiotherm, electrothome, and high tension machines are summarized. In the majority of the cases the spark-gap machine (electrothome) was used.

In 90 patients with a prostatic bar the residual urine before operation varied from 0 to complete retention (average 100 c cm). After operation, 72 patients emptied their bladders without symptoms. There were no operative deaths. Seven patients were operated upon a second time because of recurrence of the symptoms. Three of these developed intra-urethral lobes from one to two years after the operation.

Twenty-two patients were operated upon for bar and intra-urethral lobes. Nineteen are now without residual urine and 3 retain from 15 to 45 c cm without symptoms.

Eighteen patients were operated upon for an obstructing scar following prostatectomy which caused retention varying from 90 c cm of urine to complete retention. Three had persistent suprapubic fistulae.

ter which first protrudes into the bladder and then prolapses through the urethra. He reports eight cases collected from the literature. The first case was reported in 1835 by Sechler but the first case diagnosed before operation was reported in 1927 by Jeanbran.

All of the cases have been those of females. In the male, extravascular prolapse of the ureter is impossible on account of the narrowness of the urethra. In six of the cases reviewed by the author the ages of the patients ranged from fourteen to fifty two years. In two of ten cases, pregnancy and labor were thought to be factors. In some of the cases the tumor prolapsed from the urethra following violent effort such as sudden forced urination, coughing or straining at defecation.

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JAMES B. MAJOR, M.D.

BLADDER, URETHRA, AND PENIS

Boyd, N. L.: Nephrostomy and Nephrectomy in Carcinoma of the Bladder. *J. Am. M. Ass.* 1934, xdx, 1294.

Boyd calls attention to the value of nephrostomy as a means of diverting the urine, improving kidney function, and lessening the injurious effects of infection preliminary to radical operation for carcinoma of the bladder and as a palliative measure in cases of carcinoma of the bladder which is inoperable. The disadvantages of the procedure have been due to the lack of a satisfactory tube and urine collector and the use of an operative technique which did not prevent hemorrhage or leakage of urine about the tube. Both of these disadvantages have been overcome by the technique reported by Cabot last year. Boyd emphasizes the frequency and importance of urinary obstruction in carcinoma of the bladder which can be prevented by nephrostomy. He states that nephrectomy has many disadvantages, and that transplantation of the ureter is much more unsuitable in cases of carcinoma than in cases of atrophy of the bladder.

ANDREW McNALLY, M.D.

Barbillion, P.: Non-Gonococcal Urethritis. Diagnosis, Etiology and Treatment (*Les urethrites non gonococciques*). Diagnostic, étiologie, traitement. *J. Chir. méd. et chir.* 932, xxxv, 177.

Non-specific urethritis is about as common, least as important, as gonorrheal urethritis. The two

the most important problem is the prevention of recurrence after treatment. There are three probable causes of recurrence of simple papilloma: (1) the overlooking of small growths by the urologist, (2) the implantation of fragments, and (3) persistence of the original cause. The author has found that recurrence is greater after open operation than after cystoscopic fulguration. The treatment of choice for malignant growths is resection of the bladder wall or, in late cases, total cystectomy.

The two most common forms of urinary obstruction are (1) stricture and (2) enlargement of the prostate gland. During the last thirty years there has been a progressive decrease in the number of cases of stricture admitted to the wards of St. Peter's Hospital, London. In the author's opinion this may be attributed to increased efficiency in the early treatment of stricture and in public service for the treatment of venereal disease.

With regard to intra-urethral operations for prostatic enlargement, Thomson-Walker states that these procedures have for their object the removal of portions of the intravesical obstruction or the formation of a gutter in this projection. Unless we are to limit them to a small group of cases, we must hold the view that the obstruction is due entirely to the intravesical enlargement of the gland. However it has been found that prostatic obstruction is relieved by removal of the intravesical projection in only 20 per cent of the cases. Prostatectomy as now practised was developed following recognition of the fact that the extravescical enlargement should also be removed.

JACOB S. GROVE, M.D.

Jehtel, B. A Contribution to the Experimental, Roentgenological, and Clinical Study of Intravenous Urography. A Critical Study (Contribution à l'étude expérimentale, radiologique, et clinique de l'urographie intraveineuse. Étude critique) *J. d'urolog. méd. et chir.*, 1932, XXXI, 115.

The author compares intravenous urography with retrograde pyelography in the diagnosis of renal tumor, polycystic kidney, renal and ureteral anomalies, and vesicoprostatic disease.

He states that in cases of renal tumor, especially cancer, intravenous pyelography has proved wholly insufficient as pyelo-ureteral dynamics do not allow sufficient stasis of the solution for a distinct image and uroselectan is poorly eliminated in kidneys involved by cancer. He reports three cases representing three types of renal cancer—the hæmaturia type, the tumoral type, and the combined hæmaturic and tumoral type—in each of which uroselectan gave a very poor image and retrograde pyelography was necessary to make the diagnosis. However he considers intravenous urography a valuable adjunct when the calyces fill poorly from below.

In cases of polycystic kidney the clinical diagnosis is often easy because of the bilaterality of the condition, but it becomes difficult when a unilateral tumor is associated with hæmaturia. Under the latter circumstances retrograde pyelography is nec-

essary to rule out cancer. In two cases of polycystic kidney reported by the author the uroselectan was so poorly eliminated that the diagnosis could be made only by retrograde pyelography.

In cases of renal and ureteral anomalies, intravenous urography is of importance as it reveals the presence of such conditions as reduplication of the ureters, supernumerary kidneys, and single kidney, which might be missed by retrograde pyelography.

In vesicoprostatic disease, intravenous urography has yielded valuable information regarding bladder motility. However it is indicated only in cases in which instrumentation is impractical as cystoscopy reveals the nature of the lesion more accurately.

In conclusion the author says that intravenous urography is indicated when, for anatomical, pathological, or technical reasons, cystoscopy and ureteral catheterization are unwarranted, when endoscopic methods are difficult or their findings are doubtful, and when catheterization has proved useless, and when retrograde pyelography may infect the kidney. It often gives excellent results with minimal discomfort to the patient.

Retrograde pyelography is preferable to intravenous urography in renal tuberculosis, hydronephrosis, renal cancer, and polycystic kidney, and in all cases in which cystoscopy is indicated or ureteral catheterization may be of therapeutic value.

JAMES B. MASON, M.D.

Klaue. Lymphogranuloma Inguinale (Ueber Lymphogranuloma inguinale) *Ztschr. f. Geburtsh. u. Gynæk.*, 1932, CII, 405.

Lymphogranuloma inguinale has no relation to lymphogranulomatosis. The application to the former condition of the term "fourth sexual disease" has not been established although this term would be appropriate as the disease is contracted only in the sexual relationship. It would be better yet to designate the condition by the names of the French physicians who first described it. Chronic elephantiac ulcer of the vulva and anus, which is usually called "estiomène" in France, must also be mentioned in this connection. Although the disease was originally observed in the torrid regions, it is not rare in the temperate zones. In 1930, 101 cases were observed in the Virchow Hospital in Berlin in a period of eleven months. The clinical picture is of practical importance to the gynecologist.

The disease begins with a usually non-characteristic primary lesion in the form of an erosion encircled by herpetic blisters or, in the female, by small ulcerations of the labia. However, Frei states that at times the primary lesion is very much like *ulcus molle*. The primary lesion is frequently not seen by the physician because the patient does not seek his services at this stage and the lesion disappears after a short time (after from ten to twenty days) without ever having been troublesome. From two to three weeks after the infection (more rarely not until after six weeks), the characteristic changes in the lymph glands begin to appear. The glands

After the operation the fistula promptly healed and all but 2 of the patients were able to empty their bladders. Two had a retention of 30 c.cm.

Fifteen patients were operated upon for obstructing carcinoma of the prostate. The residual urine before operation varied from 30 c.cm. to complete retention (average 230 c.cm.) After the operation, 9 of the patients emptied their bladders and 3 had from 15 to 90 c.cm. of residual urine.

Five patients were operated upon for bar and moderate intra-urethral and intravesical intrusion. The residual urine varied from 30 to 120 c.cm. (average 85 c.cm.) Since the operation all empty their bladders with the exception of 1 who retains 10 c.cm. Urination is normal except in 1 patient who has nocturia.

The operation is usually performed under spinal anesthesia induced with 50 mgm. of novocain crystals or caudal anesthesia induced with from 50 to 60 c.cm. of a 2 per cent solution of novocain. Bilateral vasectomy is advisable. The instruments used by Collings include his telescope or the panendoscope, bakelite sheath 26 F. a loop electrode, a knife electrode, and the high-tension spark gap machine. The type of obstruction is studied through the cysto-urethroscope. After the verumontanum has been located the cysto-urethroscope is rotated and the loop engaged upon the intra-urethral lateral lobe. As the current is turned on the electrode is pushed forward by hand quickly for a distance of about 1 cm. The current is shut off until all bubbles and bleeding cease. The current is applied and the loop pushed forward in the prostatic urethra. As the electrode passes through the bladder neck the sense of resistance is lost. The cysto-urethroscope is pushed along just enough to keep the loop in view at all times. The bladder wall is not touched. The section of prostate adheres to the loop and is removed with the telescope. Sections of lateral lobe are removed similarly. The treatment is continued until a distinct cavity appears and all evidence of obstruction has disappeared. The other intra-urethral lobe is then removed.

For removal of the median lobe, the loop is engaged just behind the verumontanum and the prostatic urethral floor is cut down until the bladder neck is approached. As the loop passes through the vesical outlet the ocular end of the cysto-urethroscope is depressed. In this way it is possible to avoid touching the trigone. Several sections are cut out until a wide-open floor is seen. A posterior lip of prostatic tissue often produces lateral obstruction. To prevent this, the floor is cut deeper with the knife electrode from the apex of the trigone to point near the base of the verumontanum. An indwelling catheter No. 26 or 28 F. is tied in the urethra for two or three days.

The author believes that small and moderate-sized prostatic obstructions may be efficiently removed under direct vision with the high-tension cutting current through the cysto-urethroscope. Because of instrumental difficulty and prolonged cystoscopic

manipulation, marked enlargement is best relieved by prostatectomy. The operation reflects a serious condition in an elderly patient with minimal danger to life. In the cases reviewed there were no deaths from the operation.

LOUIS NICHOLS, M.D.

Cline, P.: Osteoplastic Metastases in Prostatic Carcinoma. *Brid J Radiol* 1932, v 745.

Sclerosis or increased density of bone is the very opposite of the changes which are usually associated with cancer. As a rule bone invaded by cancer is destroyed. The assertion that sclerosis is an attempt of the body to strangle the invading growth does not explain why this attempt is made chiefly in cases of metastasis from prostatic cancer or why some metastases from prostatic cancer cause bone destruction while others do not.

Various theories as to the cause of osteosclerosis in metastatic carcinoma suggest the occurrence of a carcinomatous osteitis around the metastatic deposits with arterial obstruction playing a part.

Statistics show that carcinoma of the prostate has the most marked tendency of all primary tumors to produce metastases in bone, and that the vast majority of osteoplastic metastases are of prostatic origin.

Following a review of the routes of metastatic invasion of bone, the theory is advanced that osteoplastic metastases result from lymphatic spread and osteoblastic metastases from vascular obstruction. It is suggested also that in the formation of osteoplastic metastases some extraneous factor such as the parathyroids, may cause a local disturbance of calcium metabolism resulting in the retention of calcium which would normally be excreted.

JACOB S. GROVE, M.D.

MISCELLANEOUS

Thomson-Walker, Sir J. Some Changes and Problems in Urology. *Proc. Roy. Soc. Med. Lond.* 23, 227-77.

With regard to the intravenous administration of mercurochrome in urinary tract infections Thomson-Walker states that in his cases of involvement of the urinary organs as part of a general septicemia this treatment did not affect the course of the disease. It proved of no value also in pyelitis and pyelocystitis which resisted other methods. When a septicemia originating in the urinary organs had become established the intravenous use of mercurochrome was followed by immediate improvement, but relapses took place and subsequent repetition of the treatment had less effect. On the other hand, in serious persistent or recurrent toxemia originating in the kidneys, it sometimes resulted in recovery when other methods failed.

In chronic renal tuberculosis the treatment of choice is nephrectomy provided the other kidney is healthy and there is no definite contra-indication.

In cases of tumors of the bladder—both those of simple papilloma and those of malignant growth—

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Abruzzini, P. Men of Glass, Osteopsathyrosis (Gli uomini di vetro, osteopsatrosi) *Polichin*, Rome, 1932, xxxix, sez. chir. 521

The author discusses the etiology, pathological anatomy, symptoms, diagnosis, and treatment of osteopsathyrosis, known also as osteitis fragilis and fragilitas ossium. He then reports the case of a boy nineteen years of age who had ten spontaneous fractures. The case history is supplemented with roentgenograms. A. LOUIS ROSE, M.D.

Prichotho, A., and Moskvén. Luetic Spondylitis (Luetische Spondylitiden) *Ortop. i traumat.*, 1931, 1, 12

Of 120 cases of syphilitic disease of the bones, the vertebral column was affected in 8. In 3 of the latter the cervical region, in 2, the thoracic region, and in 3 the lumbar region was involved. Three cases came for treatment at a relatively early stage which required recumbency in bed. The Wassermann test of the blood was negative in 2 cases and the Wassermann test of the spinal fluid was negative in 5. The focal reaction test (development of pain in the affected part) following the intravenous injection of a 10 per cent solution of sodium iodide proved of value. Contrary to experience in the tuberculous form of spondylitis, relief from weight-bearing and immobilization did not result in much relief of the symptoms. The typical roentgen picture of associated destructive and reparative processes was found in 5 cases. Of greater importance was the demonstration of bone lesions in other parts of the body. In 2 cases a spondylitis luetica simplex without visible roentgenological changes was assumed. E. OSTEN-SACKEN (Z)

Tichenov, V. Luetic Spondylitis (Spondylitis luetica) *Ortop. i traumat.*, 1931, 1, 44

The author reports four cases of spondylitis gummosa and one case of tabetic fracture of the spine. In the first case severe pains developed in the back "following a cold." The second and third lumbar vertebrae were prominent and the patient was forced to use crutches. On the assumption that the process was tuberculous, a plaster cast was applied and allowed to remain on for six months. The roentgenological findings were typical. Rapid healing occurred under specific treatment.

In the second case a kyphosis in the lower thoracic region and a cold abscess in the thigh led to a diagnosis of tuberculosis although the definitely intermittent character of the pain which was entirely independent of weight bearing and the presence of a

typical ulcer of the leg should have indicated the early institution of the proper treatment. Eight years later a pronounced gibbus had developed and the first three lumbar vertebrae had fused together into an amorphous mass.

The third case was remarkable for the manner in which the infection occurred. The patient was a farm woman who partook of food from the dish of a stranger to whom she gave shelter. The entire family became infected and were given specific treatment. Two years later the woman gave birth to a healthy child, but three days after delivery while lifting a heavy burden she experienced acute pain in the back. On examination, the twelfth thoracic and first lumbar vertebrae were found to be about half destroyed. Interspersed among the areas of bone destruction were areas of bone proliferation. The Wassermann test of the blood was negative.

In the fourth case syphilitic infection was contracted and specific treatment was given twenty years previously. The patient had been married twice and twelve years previous to the time she was examined by the author had borne a normal female child. She had recovered from typhus and typhoid fever without complications, but an attack of grippé caused an exacerbation of gummosa spondylitis involving the seventh cervical and the first and second thoracic vertebrae. Examination revealed a cold abscess containing yellowish pus in the region of the third and fourth thoracic vertebrae.

The fifth case was that of a forty-six-year-old woman who, during convalescence from a severe attack of grippé three years previously, slipped and fell with all of her weight on the buttocks. Since that time she had been confined to her bed, being unable to walk although not actually paralyzed. For a month before the accident she had been suffering pain in the legs and back. Immediately after the accident the pain became much more severe and a prominence appeared in the lumbar portion of the spine. When the patient entered the clinic she was greatly emaciated. When she was seated there was a gibbus of 110 degrees at the level of the iliac crests. This almost disappeared with an audible crepitus when she braced herself up with her hands. The findings in the nervous system were typical of tabes. Wassermann tests of the blood and spinal fluid were negative. E. OSTEN-SACKEN (Z)

Mitchell, J. I. Vertebral Osteochondritis *Arch. Surg.*, 1932, xxi, 544

Vertebral osteochondritis is a disease of the body of a vertebra which occurs during the first decade of life and is analogous to osteochondritis and epiphysitis occurring in other bones during the period of growth. Eight cases have been reported to date. The

most affected are those immediately above and below the bend of the groin, the glands of the inguinal sulcus itself being but rarely involved. Of diagnostic significance is the involvement of the iliac glands and the group of glands in the abdominal wall described by Kuettinger. There is a progressive enlargement of the involved glands which soon become doughy in consistency and form irregular masses which at times become as large as a man's fist. At first they are not adherent to the overlying skin, but soon involvement of the skin is manifested by a bluish to brownish discoloration. Disintegration with slight pain then occurs. The skin is eventually perforated and the characteristic picture of numerous small fistule with exuberant or cicatricial borders appears. Not all food break down so completely. Even spontaneous recession may occur. Frequently this is interrupted by periods of obstinate recurrence. In the region of this chronic fistulous process in the groin the skin may assume the character of a chronic

fibrous elephantiasis (Bartels and Biberstein) which places the condition in the eschiomene group. In the course of the disease an immunity is established.

There are also abortive forms of the disease in which the process runs its course within the substance of the lymph glands without any external manifestations, but is no less destructive in its effects. In the development of the various forms of eschiomene, particularly chronic ulcer of the vulva and perhaps also the severe forms of stenosis of the rectum, it is probable that there is in addition a mixed infection with non-specific bacteria which is favored by the disease weakened lymphatic tissues of this region. The Wassermann reaction is usually negative. The diagnosis is confirmed by the skin test of Frei. The skin test of Frei is of special importance in the differential diagnosis from skin moles although there is a specific skin test for the latter condition.

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and in its place there is a beginning thickening with small fragments of bone. Structural irregularity is not pathological *per se*, as it is sometimes found under normal conditions.

In one of the author's cases there were symptoms at the apex of the patella. In this case the tuberosity of the tibia showed no changes suggesting epiphysitis, but in another case such changes were observed. The disease lasted several months, but disappeared rapidly after rest.

Histological examinations show that this condition is due, not to a pathological bone process or fracture, but in a certain degree to a physiological form of ossification which may be considered a reaction of the bone to irritation at its growing edge. The changes should be considered as disturbances of the ossification process precipitated by a functional irritation such as that associated with epiphysitis.

The author reports also seven cases of fragmentation, fracture, and rupture of the tendons at the edge of the base of the patella. He believes that in at least some of the cases the cause of the ossification centers found at the base of the patella was the same as in the first three cases reported by him in this article. In the others, the lesions obviously developed as the result of chronic or acute trauma. The cause of a typical rupture of the quadriceps appears to be an indirect trauma in the form of passive hyperextension of the quadriceps tendon.

LOUIS NEUWELT, M D

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Dalnell, M. Muscle Grafts and Transplants (Innesti e trapianti muscolari). *Ann Ital di chir*, 1932, vi, 817.

The author reviews much of the experimental work on muscle grafting which has been done to date, some of the factors and difficulties in the technique, and some of the factors and findings in the transplantation of other tissues such as the testicle and thyroid.

He divides his own experiments into those in which free grafts and those in which pedunculated grafts were employed. He found that eventually all of the grafts were replaced by new connective tissue after a process of degeneration and necrosis. In the pedunculated autogenous grafts examination revealed an atrophic reduction in the muscle bundles with gradual substitution by connective tissue. None of the grafts maintained its normal constituency. The administration of extracts of the muscles to be grafted before and after the transplantation in an effort to desensitize the animal had no effect on the ultimate fate of the graft.

The author concludes that in the case of homoplastic grafts the failure of the transplantation may be due to histological humoral, nerve, or blood-vessel disturbances and that in the case of the pedunculated grafts the most important factor allowing substitution of the graft by connective tis-

sue is loss of the physiological tone of the muscle fibers.

A. LOUIS ROSE, M D

Mason, M L, and Shearon, C G. The Process of Tendon Repair. An Experimental Study of Tendon Suture and Tendon Graft. *Arch Surg* 1932, xvi, 615.

The experimental study reported by the authors was carried out on sixty-nine dogs. In thirty-five of the animals a tendon was divided and immediately sutured, and in thirty-four a segment of tendon was removed and immediately replaced by another segment of tendon from the same dog. In all of the experiments the tendon of the dog which corresponds to the extensor carpi radialis in man was used. Some of the legs were immobilized whereas others were allowed free movement. At varying intervals the legs were examined, the operative field was exposed and the tendon was removed for microscopic study. In a few instances the specimens were discarded because of gross infection, and in a few others the specimens were lost.

Except in ten experiments, the tendon sutures were uniformly done by the Kanavel and Koch type of lacing suture. The sheath was opened in various ways and was treated in various ways at the time of operation. In some instances the sheath was cut transversely or longitudinally and no attempt at repair was made. In others it was cut transversely or longitudinally and repaired by suture. The protocols of these experiments supplemented by photomicrographs of the healing process after intervals of one, two, and three weeks are included in the report.

The healing process was essentially the same throughout the series of experiments except that it varied considerably in its rate of progress. During the early part of this process the sheath or peritendinous tissues played the greater rôle. The tendon soon began to proliferate and in a short time assumed the major rôle in the healing process by extending across the gap. After this process was well under way the sheath or peritendinous tissues began to loosen up and resume the rôle of a gliding tissue. In no instance did a true synovial sheath develop. In all cases of suture there was separation of the tendon stumps irrespective of the procedure. When the knots of the suture material lay between the tendon stumps they appeared to interfere considerably with the healing process.

The tendon grafting was done by excising a segment of tendon from the extensor carpi radialis and filling the defect with the same segment after severing all blood supply or by filling the defect with a segment of tendon of equal length from another tendon of the same dog. The method of suturing the graft varied somewhat. In some instances the suturing was done by threading the graft on the suture material which was used as a tension suture, while in others the graft was sutured end-to-end to the stumps by the Kanavel suture. In a few instances the graft was cut long enough for overlapping and side-to-side suture. The treatment of the sheath

author reports a case in which the clinical and roentgenological findings were similar to those in the cases reported previously.

Mitchell's patient was a boy four years of age. The chief complaints were a limp and pain in the right knee. The family history was unimportant except that an aunt had died from tuberculosis.

The child was well developed but undernourished. The right knee appeared normal. Deep palpation revealed moderate tenderness over the upper end of the right femur and there was limitation of the movement of the joint by muscular spasm. The right hip was held flexed and adducted. The gait was guarded, and voluntary movements of the spine were restricted. Passive motion of the spine was free. There was no visible or palpable deformity.

Roentgenograms showed a cyst at the upper end of the right femur extending into the neck of the femur and flattening and increased opacity of the body of the twelfth dorsal vertebra. The height of the intervertebral disks above and below the vertebral lesion was increased. The remaining thoracic and lumbar vertebrae were normal.

The Wassermann reaction was negative. The inorganic calcium in the blood was 1 mgm. and the inorganic phosphorus 3.6 mgm. per 100 c cm. The von Pirquet reaction was negative.

Exploratory operation on the femur led to a histological diagnosis of fibrous connective tissue which confirmed the previous diagnosis of osteitis fibrosa cystica.

On removal of the first cast, the wound was found to be healed by primary intention. A month later the second cast was removed, a caliper brace was applied to the leg, and a leather corset with a head support was applied to the spine. On repeated examinations of the spine and hip, motion was found to be free and painless. A year after the first examination, roentgenograms revealed persistence of the flattening and increased density of the twelfth thoracic vertebra and, in addition, a similar flattening and increased density of the eighth thoracic vertebra. Roentgenograms five months later revealed flattening of the twelfth, eighth, and third thoracic vertebrae. The child has now been on a Bradford frame for eight months. At the most recent examination the spine was found straight, painless, and freely movable and an attempt at regeneration of the twelfth dorsal vertebra was apparent.

The cause of vertebral osteochondritis is unknown. In the reported cases the age incidence of the condition varies from twenty months to ten years. Males and females are affected with equal frequency. Tuberculosis can be excluded because the disease involves the vertebral body and leaves the intervertebral disks intact. The density of the bone is increased. In six of the nine cases in which a tuberculin test was recorded the test was negative. Successive roentgenograms over a period of years have shown regeneration of the vertebral body to its normal contour.

Syphilis can be excluded by the Wassermann test.

The condition should not be confused with congenital malformation as it is acquired after birth.

The most acceptable theory regarding the etiology and pathogenesis of the condition is that of Cahn and Hochman. According to this theory there is an imbalance between the static demand and the static capacity of the newly formed bone, and under the influence of some cause of infection or endocrine origin, the body of the vertebra softens.

Vertebral osteochondritis is a true disease entity running a characteristic course and tending toward spontaneous recovery with regeneration of the affected bone.

The treatment indicated is immobilization of the spine with appropriate apparatus, combined with general hygienic measures.

NOBLE W. C. BUTLOCK, M.D.

Brosfeldt, S. A.: Diseases of the Bone of the Patella Produced by Chronic or Acute Trauma (Durch chronisches oder akutes Trauma hervorgerufene Erkrankungen der Basis patellae). *Acta. Soc. med. Fennica Scandinavica* 1933, 217, 4.

During the last three years the author has seen a patellar disease not observed by him before and not described in the literature. Having encountered three such cases within six months, he believes that the condition is not very rare. According to the clinical picture it is so distinct and circumscribed that it may be regarded as an entity even though it has close relationships to other bone changes.

Brosfeldt reports his three cases in detail. The patients were two boys and one girl between the ages of seven and eleven years. In the case of one of the boys sensitiveness of the knee was experienced as jumping and a few months later was followed by pain. In the second case the left knee became painful without trauma and when it recovered the right knee became involved without apparent cause. In the third case both knees became painful after exertion without injury. The symptoms were always gradually developing sensitiveness and pain in the region of the knee. The youngest patient had had rickets, but the others had not been affected by that condition. The patellar region was painful and swollen and examination revealed at the base of the patella a saddle-shaped thickening a few centimeters thick which surrounded about one-third of the patellar border and was very sensitive. Occasionally the knee joint contained fluid. The muscles showed no apparent atrophy. In one case there was slight sensitiveness of the apex of the patella and of the tuberosity of the tibia.

Roentgenography revealed usually typical changes corresponding to the findings of palpation. Anterior and lateral exposures showed the saddle-shaped thickening to be due to increased amounts of calcium. In more advanced cases the shadow covered also the upper anterior surface of the base of the patella and part of the dorsal surface. In the earlier and more severe cases the entire upper part of the base of the patella disappears in the roentgenogram.

cases) Fractures in the cervical and lumbar portions of the spine were due most frequently to indirect violence, whereas those in the thoracic portion were due most frequently to direct violence. Of the 177 cases in which the spine was examined roentgenologically, only 1 vertebra was found involved in 120 (72.88 per cent). The twelfth dorsal vertebra was fractured in 21 cases and the first lumbar vertebra in 41.

In all of the cases the fractures were associated with pain and rigidity. Of 187 cases, deformity was present in 130 (69.51 per cent). Kyphosis was present in 106 (56.68 per cent) and scoliosis in 24 (12.83 per cent). Ninety-nine (53.73 per cent) of the 184 patients showed no nerve symptoms, 50 (27.10 per cent) were paraplegic, and 35 (19 per cent) had limited paralysis of sensation or motion. Paraplegia occurred most frequently in the thoracic region (34 of 63 cases). In the thoracic region, fractures of the fifth, sixth, and seventh vertebrae were most frequently associated with paraplegia. Paraplegia was present in all of the 6 cases of fracture of the sixth thoracic vertebra.

It is possible for motion to be regained after fracture of the spine. Of 72 cases of flaccid paraplegia, spastic paraplegia resulted in 6, limited paralysis in 20 and cure in 5. In 41 there was no change. Of 5 cases of spastic paralysis, the condition remained unchanged in 3 and was cured in 2. Of 23 limited paralysis, only 8 were cured.

Immobilizing treatment gave good results. Laminectomy was unsuccessful even when it was performed early. The paraplegics were rendered able to walk by reeducation and the use of simple prostheses.

ANDREW GOSS MORGAN, M.D.

Scaglietti, O. A Clinicostatistical Study of Cases of Congenital Dislocation of the Hip Seen at the Rizzoli Orthopedic Institute in the Period from 1879 to 1921 (Studio clinicostatistico sui casi di lussazione congenita dell'anca osservati all'istituto ortopedico Rizzoli dal 1890 al 1921). *Chir. d'organi di movimento*, 1932, xvii, 225.

This article is based on a review of statistics on congenital dislocation of the hip published in the literature and 3,216 cases of the condition with 4,692 dislocations which were seen at the Rizzoli Orthopedic Institute in Bologna during the period from 1890 to 1921.

Of the patients treated at the Rizzoli Institute, 84.73 per cent were females and 15.27 per cent were males, the ratio of males to females being 1:5.54. According to the statistics published in the literature, 84.95 per cent of the patients were females, 15.27 per cent were males, and the ratio of males to females was 1:5.64.

The condition was unilateral in 54.10 per cent of the cases and bilateral in 45.90 per cent, the difference being 8.20 per cent and the ratio of bilateral cases to unilateral cases 1:1.17. The dislocation occurred on the right side in 33.61 per cent and on the left side in 20.49 per cent, the ratio of dislocation

on the left side to dislocation on the right side being 1:1.64.

Bilateral dislocation occurred in 46.65 per cent of the females and 41.76 per cent of the males, the difference being 4.89 per cent. Unilateral dislocation on the right side occurred in 33.39 per cent of the females and 34.32 per cent of the males, the difference being only 1.43 per cent but unilateral dislocation on the left side occurred in 23.42 per cent of the males and 19.06 per cent of the females, the difference being 3.46 per cent.

Direct heredity was evident in 6.60 per cent of the cases and familial occurrence in 17.41 per cent. The incidence of familial occurrence was 20.54 per cent in the cases of males and 16.86 per cent in those of females, with a difference of 3.68 per cent. Hereditary familial occurrence was evident in 22.73 per cent.

A history of difficult birth and abnormal presentation was given no more frequently than by patients without congenital dislocation of the hip. Evidently, therefore, difficult delivery and abnormal presentations are not causes of the condition.

Other congenital deformities were found in only 3.42 per cent of the cases. The most frequent malformations were club-foot, the incidence of which was 1.06 per cent, and deformities of the skull and face, the incidence of which was 0.53 per cent. The congenital dislocation of the hip was almost always noticed by the family when the child began to walk. In the last ten years there has been an increase in the number of patients brought for treatment before the third year of age.

Non-operative reduction was done in 88.16 per cent of the cases and operative reduction in 2.21 per cent. In 3.85 per cent conservative operative methods such as the Lorenz osteotomy and decapitation and reconstruction of the head were used. In 4.75 per cent, the treatment was palliative.

The incidence of congenital subluxation of the hip was 81.10 per cent in females and 18.90 per cent in males, the difference being 62.20 per cent and the ratio of males to females 1:4.20. The condition was unilateral in 89.35 per cent of the cases and bilateral in 10.65 per cent, the difference being 78.70 per cent. It occurred on the left side in 54.64 per cent of the cases and on the right side in 34.71 per cent, the difference being 10.92 per cent and the ratio of subluxation on the right side to subluxation on the left side 1:1.57. Luxation occurs more frequently on the right side.

Congenital dislocation of the hip is more frequent in the lowlands than in mountainous regions. In the province of Bologna there is an average of 2 such dislocations to every 1,000 inhabitants, but in some districts there are more than 3 and in one community the average is 4.33. Congenital dislocation of the hip constitutes 73.5 per cent of all congenital deformities. It is 4 times as frequent as club-foot, the incidence of which is 18 per cent, and 28 times as frequent as torticollis, the incidence of which is 2.65 per cent.

ANDREW GOSS MORGAN, M.D.

tissues and the immobilization varied as in the suture experiments. The protocols of the thirty-four grafting experiments supplemented by photographs and photomicrographs are included in the report.

In the grafts the process of repair was essentially the same as that following simple end-to-end suture although the presence of the tendon graft in the defect was seen to play a definite rôle in the healing. The specimens showed a varying rate of progress. The changes which took place during intervals of a few days are described. In the healing process two phases could be distinguished. In the first phase, i.e., during the first two weeks, the union between the graft and stumps was due to proliferation of the respective sheaths or peritendinous tissues and there were proliferative changes beginning in the tendon. The second phase was the phase of tenoblastic proliferation of the stumps and graft and overlapped the first phase. After the second week the second phase was the more important. As the sheath became of less importance as a uniting structure it began to take up the function of a sliding tissue.

In summarizing the authors state that the healing process of the repair of tendon defects consists of an early union by connective tissues and a later union by tendon-cell proliferation. In tendon grafting the graft should be left surrounded by its own carefully handled and preserved peritendinous tissues and the tendon should be sutured end-to-end in such fashion as to prevent retraction. In the experiments reported a certain amount of retraction invariably occurred, and it is reasonable to assume that it occurs also in the human being. It is evident that the wider the gap the greater the chance for scar tissue to interfere with the direct tendon cell union. When transplanted as a free graft, the tendon with its surrounding connective tissue maintains its vitality. Accordingly such transplantation seems to be the logical means of bridging a gap rather than the use of silk, fascia and other substances.

The authors draw the following conclusions:

1. In tendon suture any sheath tissues present should be as carefully approximated as the tendon because they unite early and function while the tendon is proliferating.
2. Accurate end-to-end apposition of tendon stumps is beneficial to healing.
3. In sutured tendons, movement may be started cautiously by the fifth or sixth day but no force should be exerted before the third week.
4. Defects in tendons should be filled with a tendon graft plus its sheath tissues and not by fascia, as the tendon graft forms true tendon which will not tend to stretch as would ordinary connective tissue.

Del Valle, D., and Sztamowski, S. Hoffa's Disease. The Report of Two Cases (*Enfermedad de Hoffa*—*Don observations*). *Secciona Med.*, 193, xxix, 379.

In 1903 Hoffa encountered a case of marked hypertrophy of the adipose tissue located beneath the patellar ligament. In 1904 he reported seven similar cases, in all of which an operation was performed.

Since then the condition has been known as Hoffa's disease."

In one of the two cases reported by the authors the disease followed a severe trauma, and in the other it was due to syphilis. Hoffa contended that trauma was the only cause, but since his report cases due to other causes such as tuberculosis, the formation of a true lipoma, and syphilis have been recorded.

The clinical picture is characteristic. After trauma or during the course of a chronic disease process the patient begins to complain of progressive fatigue and finally of pain in the affected knee. The pain occurs only when the knee is used. Progressive limitation of extension then results from impaction of the hypertrophied fat between the articular surfaces. This makes the patient walk with his knee partially flexed and bearing his weight on the metatarsophalangeal joints with the foot in the equine position.

Examination reveals (1) hypertrophy of the fatty ligament producing a pseudotumour and painful swelling on both sides of the patellar tendon, which may be exaggerated when the patient stands, (2) absence of bony changes around the joint, (3) partial limitation of extension with normal flexion, (4) atrophy of the quadriceps, and sometimes (5) the presence of a roentgen-ray shadow.

The prognosis depends upon the treatment. If the patient is untreated, he remains crippled. The treatment indicated is surgical removal of the tumor mass. Physical therapy and medical treatment have no effect on the condition. In the treatment recommended by the authors the fat pad filling the retro-patellar space is removed through a parapatellar incision made on the lateral aspect of the knee. The fat pad is found to be loosely attached to the posterior surface of the patellar tendon and the upper end of the tibia but fixed firmly to the articular capsule. Three prolongations at its upper end are severed as near their insertion into the meniscus as possible. This procedure opens the knee joint. No attempt is made to close it. After closure of the aponeurosis and skin, the knee joint is immobilized for twelve days, and at the end of that time passive and active and passive motion are begun. Complete recovery usually results within 10 or three months.

WILLIAM R. TOPANSPORT, M.D.

FRACTURES AND DISLOCATIONS

Faldini, G. and Giannelli, A. M.: A Clinico-orthopedic Study of 199 Cases of Fracture of the Spine (Considerazioni clinico-ortopediche su 199 casi di frattura della colonna vertebrale). *Chir. e ortop. di movimento*, 1931, 2, 242.

Of the 199 cases of fracture of the spine reviewed, 150 (75.37 per cent) were those of males and 49 (24.6 per cent) those of females. One hundred and seven (53.77 per cent) of the patients were in the third or fourth decade of life. The lumbar spine was involved most frequently (41.71 per cent) of the

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Allen, E V, and Brown, G E Raynaud's Disease
J Am M Ass, 1932, xcix, 1472

The confusion in the diagnosis of Raynaud's disease which is shown by even a cursory survey of the literature seems to have a single basis departure from the criteria given by Raynaud

Raynaud stated his opinion regarding the mechanism of production of the disease as follows "I would say that in the present state of our knowledge local asphyxia of the extremities ought to be considered as a neurosis characterized by enormous exaggeration of the excitomotor energy of the gray parts of the spinal cord which control the vasomotor innervation"

In 1929, the exact antithesis of Raynaud's opinion was expressed by Lewis as follows "The primary cause of spasm of the digital vessels in Raynaud's diseases of the common type is not an abnormal vasomotor impulse but a local fault of the vessels"

The question to be answered is Can vasomotor activity be induced in the digits after complete removal of the sympathetic control of the arterioles? On the basis of a study of two cases which were far advanced and complicated with trophic lesions, Lewis answered this question in the affirmative, whereas on the basis of tests of persons with uncomplicated Raynaud's disease, Simpson, Brown, and Adson answered it in the negative. It must be concluded from these studies that uncomplicated Raynaud's disease is due to hyperactivity of vasomotor innervation, and that in advanced cases "local fault" of the digital arteries is an added factor

In the period from January, 1920, to July, 1931, a diagnosis of Raynaud's disease was made 265 times at the Mayo Clinic Close examination of the records of the patients caused the authors to exclude 61 cases on the basis of atypical symptoms, inadequate data, evidence suggesting occlusive arterial disease or of primary organic disease of various systems with secondary vasomotor changes Of the remaining 204 cases, 147 were uncomplicated, 51 were of the type with scleroderma or arthritis and 6 were of the type with trophic changes or recurrent infections unassociated with scleroderma or arthritis This report is based on the 147 cases that were uncomplicated

Of the 147 patients, only 17 were males The reason for the greater frequency of the condition in females is not known Arranged in decreasing order of frequency, the decades of life in which the symptoms began were the third, fourth, second, fifth, sixth, first and seventh Nationality apparently

plays no part in the etiology of the condition as the patients were American, German, Jewish, English, Norwegian, Polish, Swedish, Austrian, Canadian, Lithuanian, Welsh, Danish, Bohemian, French, Finnish, and Italian. The expected weight of each patient was calculated from the patient's height and age on the basis of standard tables Forty per cent of the women patients were unmarried In studies of the blood pressure a systolic range of from 100 to 140 mm of mercury and a diastolic range of from 70 to 80 mm of mercury were used as representing the normal blood pressure of patients of both sexes and all ages Eleven per cent of the patients were anæmic Forty per cent of the unmarried women were teachers The husbands of the married women had various occupations Menstrual disorders appeared to play little if any part in the pathogenesis of Raynaud's disease

All cases of Raynaud's disease begin with recurrent attacks of discoloration of the digits separated by periods in which the color is entirely normal The length of time elapsing between the onset of the illness and the examination of the patient indicates the mildness of the uncomplicated form of the disease Data regarding the regions involved were available in 90 per cent of the cases reviewed The changes of color were almost uniformly induced by lowered environmental temperature This phenomenon is so constant that the application of cold serves as a reliable method of inducing the changes experimentally for study The degree of coldness necessary varies greatly The changes in color may occur from 1 to 10 times daily under the most variable conditions In 107 of the cases reviewed in this article a diagnosis of some other condition was made in addition to the diagnosis of Raynaud's disease

According to the authors' experience, the most satisfactory method of treating Raynaud's disease is surgical attack on the sympathetic nervous system The selection of the cases to be operated upon depends to a large extent on the clinical syndrome The vasomotor changes associated with arthritis are usually mild and entirely relieved by operation

The requirements for the diagnosis of Raynaud's disease are (1) intermittent attacks of discoloration of the acral parts, (2) symmetrical or bilateral involvement (3) absence of clinical evidence of occlusive lesions of the peripheral arteries, (4) the limitation of possible gangrene or trophic changes largely to the skin, (5) the presence of the condition for at least two years, (6) absence of organic disease to which the vasomotor changes might be secondary, and (7) greater frequency of the condition in females than in males

Putti, V: *Statistic Regarding the Results of the Treatment of Congenital Proluxation of the Hip by the Method of Abduction, and Some Considerations on Prenatal Dislocations* (Statistica degli stati di prolussazione congenita dell'anca curati col metodo dell'abduzione e considerazioni sulle lussazioni embrionali) *Chir. e ortoped. di mercurio* 1933 xvii, 809.

To the 24 cases of proluxation of the hip which he reported in 1929, the author adds 95 more, bringing the total number up to 119. These cases were distributed chronologically as follows: 1922-1925: 1 case each year; 1926: 2 cases; 1927: 6 cases; 1928: 11 cases; 1929, 18 cases; 1930, 33 cases; and 1931: 35 cases. The results in these cases demonstrate that treatment by abduction is based on sound principles. Putti attributes the increase in the number of cases to the fact that pediatricians especially are bearing proluxation of the hip in mind and are recognizing it early by careful examination of newly born infants, often with the roentgen rays. However, it is evident that the diagnosis is still often missed. Early recognition of the condition is of importance not only for the prevention of dislocation but also because, according to the experience of the Rizzoli Institute, congenital proluxation is the causative factor in 40 per cent of cases of arthritic deformities. Arthritic processes in turn play an important rôle in the failure

of reduction. A perfect functional result can be obtained only in a hip that is anatomically perfect, and the important lesions which most commonly vitiate the results of reduction are arthritic and enchondritic processes. Every proluxation should be regarded as a potential dislocation.

Of the author's 119 cases of proluxation, the condition was bilateral in 52. Of the 67 unilateral cases, the proluxation was on the right side in 50 and on the left side in 17. Eighty-four of the patients were females. The youngest patient was thirty-four days old and the oldest sixteen months. Nineteen were four months old, and only 4 were more than 1 year old. The shortest period of treatment was four months. In 63 of the cases the treatment was continued for from seven to nine months.

Putti has not changed any of the basic principles of the technique which he described in his previous report, but has improved the method of producing abduction. In 1:3 (24.9 per cent) of the cases a perfect anatomical and functional result was obtained. In 6 cases the treatment failed. The latter are analyzed in detail.

The article is concluded with a discussion of embryonal dislocations which are produced in the earliest stages of somatic differentiation and differ from fetal or intra-partum dislocations.

EDMUND T. LAMET, M.D.

Obvious causes of rupture of the popliteal artery are fractures, dislocations, and severe injuries to the region of the knee joint. When the trauma is indirect the mechanism of rupture is less easily determined. A consideration of the anatomy of the popliteal space offers an explanation of the lesion. The popliteal artery and vein are fixed proximally at the adductor hiatus by the tendinous arch of the adductor magnus and distally by the tendinous arches of the tibialis posticus and the soleus muscles and by the interosseous membrane through which the anterior tibial artery passes. An additional factor in the fixation may be an anomalous tendon with its origin in the short head of the biceps and a fan-shaped insertion into the posteromedial aspect of the capsule of the knee joint. Because of this fixation any sudden violence sustained when the knee is in hyperextension is capable of causing rupture of the artery. In addition to the stretching action in hyperextension, there is rotation with twisting of the artery in the final locking of the joint.

Except in rare cases, the injury is followed immediately or soon by severe pain and a feeling of distention in the region of the knee. Swelling appears

behind the knee and spreads up and down the leg. A pins-and-needles sensation spreads toward the foot and gradually gives way to numbness and eventual loss of sensation. Pulsation or murmur in the popliteal hæmatoma has been noted only once or twice. In the anterior and posterior tibial arteries pulsation is absent or, when the rupture is partial, is weak. Failure to make the diagnosis is usually due to failure to consider the possibility of the lesion. In some cases the diagnosis is rendered difficult by absence of one or more of the characteristic signs.

The experience of some surgeons seems to warrant immediate ligation of both artery and vein to favor the development of a collateral circulation. In a few cases amputation may be avoided, but in the majority the prognosis is most unfavorable. The establishment of an adequate collateral circulation may be prevented by pressure of the blood clot on the collateral vessels or damage to these vessels and the soft parts by the same cause.

The prognosis of partial rupture is more favorable, but the author has been unable to find any record of a successful suture in continuity.

E S PLATT, M D

Jaeger E.: The Pathological Anatomy of Thrombo-Angiitis Obliterans in Juvenile Gangrene of the Extremities (*Zur pathologischen Anatomie der Thromboangiitis obliterans bei juveniler Extremitätengangrene*). *Arch f path Anat* 1932, centul 326, 534.

The author's presentation of the clinical picture and pathological anatomy of thrombo-angiitis is based on a study of five autopsy and twelve amputation specimens.

Spontaneous gangrene in the young depends in some cases on a special form of reaction of the intima of the blood vessels to various types of injury. In the larger arteries there are changes like those of recurring thrombo-endocarditis. In the medium-sized arteries there are fibrin thrombi with the formation of granulation tissue containing giant cells. In the smaller arteries there is periarteritis nodosa. Later there appear in long segments of the blood vessels, red thrombi which subsequently are replaced by granulation tissue. In the veins, which sometimes become diseased independently of the arteries, thrombotic occlusion develops very quickly.

Thrombo-angiitis obliterans is a general disease of the vascular apparatus. It occurs most frequently at the sites at which the blood vessels divide, but sometimes involves the internal organs very extensively and is influenced by the function of the involved part and by external injury. Occlusion of large arterial branches by thromboses is manifested by intermittent claudication. Abnormal demands on the inefficient collateral circulation of the large vessels may precipitate or lead to recurrence of the disease and, with it, so called spontaneous gangrene.

The article is illustrated with photomicrographs.
ERIC WOLSTEN (2)

Reid, M. R. The General Care of Peripheral Vascular Diseases. *Ann Surg* 1935 101, 733.

It is the author's belief that the minor details of treatment used to supplement the major treatments of peripheral vascular disease are of great importance and often neglected. The patient should know that a reduced circulation means impaired nourishment of the tissues and that instructions regarding the position and exercise of his extremities, the avoidance of cold, and the care of his skin are given him to keep the nourishment of his tissues up to the maximum.

The position of maximum circulation in the affected parts when they are at rest should be determined for each case. A practical idea of the level of optimum circulation can be obtained from observation of the fullness of the veins when the extremity is put at different levels with respect to the level of the heart. The correct level is that at which the veins are neither collapsed nor distended and are visible and apparently on the level with the surface of the skin.

Voluntary movement of the ankle and toes will cause a striking improvement in the color of an

affected foot that has been allowed to hang until it has become red and cyanotic. The patient should be informed of the harm of too much exercise and the significance of the pains of intermittent claudication. When the exercises of Boergert and Allen are indicated it is best to require a short period of hospitalization in order to teach the patient how to carry them out accurately.

Circulation is better when the skin is soft and delicate. Careful washing and greasing or oiling should be persisted in until the skin becomes as nearly like that of a child as possible.

The majority of complications of peripheral vascular disease occur during cold weather. The affected extremities should never be allowed to become cold. The patient should be required to wear woolen socks and possibly fleece-lined shoes until the feet perspire. Moderate sweating improves the texture of the skin and the nourishment of the tissues.

The most trivial wounds and infections should be treated as major complications until they are completely healed. The patient should be told of the dangers incident to the cutting of calluses and nails. For infections, the author prefers wide open dressings and the use of Dakin's solution.

All trauma to inflamed or diseased vessels should be avoided by both the patient and the doctor. Determinations of the blood pressure in the affected leg may result in damage to the artery. In addition to the direct trauma that a tourniquet may cause to a diseased vessel, the temporary stasis of blood distal to the tourniquet may favor the extension of a thrombotic process.

When amputation is necessitated by gangrene and infection of the extremities not associated with primary vascular disease the author performs the operation between two tourniquets in order to reduce the danger of infection of the stump, but when amputation is required primarily because of vascular disease he employs only the distal tourniquet in order to avoid the damage to the tissues and blood vessels that might be produced by the proximal tourniquet.

The fluid intake in cases of peripheral vascular disease should amount to at least 4,000 c.c. daily. In some instances the use of thyroid extract may improve the circulation. All foci of infection should be eliminated and the use of tobacco and alcohol prohibited.

In conclusion Reid says that routine examination of all peripheral pulses would result in the earlier diagnosis of peripheral vascular disease and would make possible the prevention of many complications which so frequently necessitate amputations.

NORMAN C. BRULOCK, M.D.

Wakley C. P. G., and Reid W. O.: Subcutaneous Rupture of the Popliteal Artery. *Lancet*, 1935, centul, 839.

Subcutaneous rupture of the popliteal artery has been reported only four times since the war. Hope of saving the affected leg depends on early diagnosis and treatment.

pulmonary oedema. In addition, acute cardiac weakness also makes the differential diagnosis very difficult. While cases of acute cardiac weakness have been diagnosed as embolism and operated upon, in a large number in which this diagnosis has been made recovery has occurred without operation.

The signs of severe pulmonary embolism so far recognized are sudden severe dyspnoea, a choking sensation, sallow pallor or cyanosis, a frequent, peripherally absent, or very small and irregular pulse, a rapid fall in the pulse tension, coldness of the skin, a cold sweat, anxiety, a premonition of death, loss of consciousness, convulsions, gradual dilatation of the pupils, loss of the corneal reflexes, rigidity of the pupils, a rapid decline, deep and labored breathing, sometimes with lagging of the affected side of the chest, which is followed by cessation of breathing, dilatation of the right side of the heart, and a systolic murmur over the site of the embolus.

The contra-indications to operation, which have been recognized up to the present time are cachexia, sepsis, marked arteriosclerosis, and pneumonia. The author does not respect these contra-indications when operation offers the only chance for life.

According to Key, three prerequisites for the performance of the Trendelenburg operation are (1) constant readiness to perform the operation, (2) instruction of the nursing personnel for rapid recognition of an embolism, and (3) the presence of an operating personnel trained in the performance of the operation. The choice of the time of the operation is also of great importance. The proper time for the operation is not when the heart begins to become paralyzed, but when it has sufficient reserve power to function regularly after the operation. Of no less importance is the technique and the ability of the surgeon to work rapidly and calmly. Perforation of the pleura, confusing the pulmonary artery with the aorta, perforation of the cardiac auncle, and injury to the pulmonary artery by the lifted rubber tube may be very serious. Frequent experiments on the cadaver are necessary. The more delicate instrument devised by Meyer is preferable to the instrument of Trendelenburg. Also of value is the linen bag proposed by Meyer, in which the instruments are sterilized and lie in the order in which they are used.

The operative and autopsy findings in 8 cases in which the Trendelenburg operation was unsuccessful are reported.

PLENZ (Z)

ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Fisher, H. E. *Electrical Shock. Illinois M J*, 1932, LXII, 322

A low-tension alternating current up to 300 alternations is more dangerous than a current with a frequency of over 4,000 per second, but high-frequency currents may be very harmful if passed through the body for long periods of time. A low-

tension current with a low frequency acts upon the heart, causing a fibrillation from which recovery may be impossible.

The conditions produced in the human body by an electrical current depend upon the source, character, voltage, amperage, and resistance involved. They include painful shocks to the central nervous system, paralysis of the brain centers affecting the function of the heart and lungs, loss of consciousness, paralysis of the voluntary skeletal muscles, paralysis of the involuntary muscles of the heart and lungs preceded by painful muscular contractions, hemolysis and excessive fluidity of the blood, and the creation of excessive heat.

The highest temperature within the body which the author was able to record was 140 degrees, but the surface temperature at the point of contact has been much higher than that. In some cases the temperature within the skull has been raised to the steaming point.

The amount of destruction of tissue depends upon the current, the contact, and the resistance of the tissues. The greater the resistance the greater the heat generated and therefore the greater the destruction or burning of the tissues.

The theoretical causes of death from electrical shock are general instantaneous cell death, brain death due to an intensive molecular concussion of the nerve cells of the central nervous system, and heart death.

When the current enters the body it is conducted to the various voluntary and involuntary muscles. The muscles made up of minute fibers are sensitive to outside electrical stimulation, and the excitation produced by it causes them to contract. If the contraction is rapid and prolonged, the muscle soon becomes fatigued. Involuntary muscle fibers contract slowly, while voluntary muscle fibers contract quickly.

The term "heart death" is applied to stoppage of the circulation from over-excitation of the muscle fibers of the heart (heart fibrillation) caused by an electrical current. In some cases the heart may give evidence of resuming its function. The blood pressure rises at first and then drops slowly. If the electrical current stops, the heart may try to resume its function, but if the current persists, the blood pressure drops to zero and death results. The heart muscle is especially sensitive to low-voltage currents and to the frequency of alternating currents.

According to the most generally accepted theory, death from electrical shock is due to heart failure from fibrillation of the ventricles and paralysis of respiration through the central nervous system.

The treatment of electrical shock is of three types—prevention, rescue, and first aid. Prevention consists in the providing of safety devices, rescue, in turning off the current and removing the victim from the source of contact, and first aid, in artificial resuscitation, usually by the Shaeffer prone method. The use of drugs is usually of no avail.

JOHN J. MALONEY, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE; POSTOPERATIVE TREATMENT

Desplas, B., and Ronchese, A. D.: Pre-Operative and Postoperative Vaccination (La vaccination pré- et post-opératoire des opérés). *Presse méd.* Par 1933 31, 139.

While pre operative vaccination with a polymicrobic vaccine creates a true immunity. It may not afford absolute protection against virulent organisms after the body has been weakened by operative trauma. The authors therefore recommend the use of a specific vaccine after operation.

Before operation, the vaccine may be given by injection, but after operation it should be given by mouth as when administered in this manner it causes less disturbance of the organism. By oral administration, it may be given twice daily to ensure a continuous antibacterial action. Emulsions of killed bacteria apparently do not traverse the intestinal mucosa; for after their administration by mouth no agglutinating substances appear in the blood and if no soluble proteins or trace of the culture medium is administered with them no change is noted in the number of leucocytes. Bacterial lysates are immediately absorbed, as is evident from an increase in the number of leucocytes even when the lysates are prepared in such a way that they contain no other proteins than the bacterial proteins. It therefore appears that, for general action, an orally administered vaccine containing bacterial lysates will have a more marked effect than a simple bacterial emulsion.

To determine the influence of postoperative vaccination on the incidence of postoperative pulmonary infections, the authors made a study of 2 groups of 180 patients each who were operated upon in 3 hospitals during the months from October to May. Those of one group were treated with vaccine after operation and those of the other group were not. The vaccine was prepared from streptococci, pneumococci, staphylococci, enterococci, colon bacilli, and pyocyanus bacilli. Bacterial lysates and whole bacteria were used. The vaccine was administered in a dose of 2 ampoules by mouth every twenty-four hours for four days. On the first day, in order to prevent its expulsion during postoperative vomiting, 1 ampoule was given immediately after the operation and another during the evening by rectum.

Of the 180 patients who were not vaccinated, 80 (44.4 per cent) developed postoperative complications. In 16 cases the complications were pulmonary: in 3 cases, enterococcal; and in 1 case, hepatorenal.

Of the 180 patients who were given postoperative vaccination, only 8 (4.4 per cent) developed com-

plications. In this group all of the complications were of the pulmonary type.

In the 360 cases there were 9 postoperative deaths. Six of the patients who died had advanced tumor, 2 had gall stones and severe icterus, and 1 had tuberculous meningitis.

The authors conclude that systematic postoperative vaccination by way of the alimentary tract tends markedly to reduce the incidence and severity of postoperative pulmonary complications. If a choice must be made between pre-operative and postoperative vaccination they prefer postoperative vaccination. When possible, they give 3 or 4 injections of a polymicrobic vaccine made of lysates and killed whole bacteria at intervals of two days before operation and administer this vaccine by the oral method for from four to six days after operation. In 180 cases in which this procedure was followed, pulmonary complications developed in only 8 (4.4 per cent).

KILLIAN STERN, M.D.

Eichelter G.: The Trendelenburg Operation for Pulmonary Embolism. A Report on the Kupper Cases and Eight New Ones (Die Operation der Lungenembolie nach Trendelenburg. Bericht über die bisher bekannt gewordenen und acht neue Fälle). *Chirurg* 932 17 109.

Trendelenburg's report on the operative treatment of pulmonary embolism was presented at the Natural Science Congress in Dresden in the year 1907. After 30 failures of various surgeons, Klinkner reported the first permanent cure in 1924. From this time on, according to Eichelter 8 of 103 patients operated upon by the Trendelenburg method have remained permanently cured. Altogether, Eichelter collected and reviewed 123 cases, partly from the literature and partly from the collected statistics of Hübner. The purpose of this article is to point out the many possible causes of failure and thereby lead to an increase in the number of cures.

The first cause of failure is the difficulty of diagnosis. In patients with severe general disease the terminal and insidious pulmonary embolism is often not recognized. With increasing study the certainty of diagnosis is increased. However, according to the literature, only every fourth to sixth case is suitable for the Trendelenburg intervention. Furthermore, the cases in which death occurs immediately as the result of a vascular reflex or acute over-distension of the heart must be excluded. False diagnoses of pulmonary embolism have been made in cases of internal hemorrhage, collapse, intestinal hemorrhage, apoplexy of the brain, septicemia, pleural effusion, pulmonary abscess, peritonitis, myocardial coronary infarct, uremia, and acute septic

hypnotic efficiency is nembutal, dial, allonal, phanadorm, pernocton, amytal, luminal, and barbitone. The arrangement according to premedication efficiency judged by minimal disagreeable side actions, minimal hypnosis after operation, and the ratio of effective to lethal dosage is nembutal, dial, allonal, phanadorm, amytal, luminal, barbitone, and pernocton.

With intravenous injection, the hypnotic effect is achieved in a few minutes, whereas with oral administration it is considerably delayed.

HAROLD M. BRILL, M.D.

Cotui, F. W., and Standard, S. Experimental Studies on Subarachnoid Anæsthesia. I. Paralysis of Vital Medullary Centers. *Surg., Gynec. & Obst.*, 1932, 11, 290.

The authors report a study of the effects of cocaine and its derivatives on the vital bulbar centers. They discuss the injection of procaine into the spinal canal and into the cisterna magna, the localization of the

action of procaine injected cisternally, resuscitation measures, and the difference in lethal dosage in the cases of normal and anesthetized animals. Their experiments were performed on dogs. Each of the dogs was given 5 mgm. of morphine hydrochloride per kilogram of body weight subcutaneously and 25 mgm. of sodium amytal per kilogram of body weight intravenously.

It was found that when procaine is injected in sufficient amounts into the cisterna magna it produces respiratory and vasomotor paralysis by direct action on the medulla. When complete paralysis occurs, artificial respiration and the intravenous injection of ephedrine are effective resuscitation measures. In narcosis induced with sodium amytal alone or with morphine, the resistance of the centers to the paralyzing effects of procaine is lowered. Therefore the authors consider barbituric acid derivatives distinctly contra-indicated for use as basal anesthetics in the induction of spinal anesthesia.

GEORGE R. McAULIFF, M.D.

Seeger, S. J.: The Hydrogen-Ion Concentration Value of Tannic Acid Solutions Used in the Treatment of Burns. *Surg Gynec & Obst* 132, 1 435

Davidson introduced the tannic acid method of treating burns in 1925. Extensive experience with this method demonstrates that it has many advantages. Pain is relieved almost immediately and the precipitated protein formed provides a protective coating against chemical, bacterial, and mechanical action as well as against sensory and inflammatory irritation. Loss of body fluids is prevented, and secondary infection, especially in superficial burns, is limited because of the lack of favorable material for the growth of organisms. The protective area of coagulated protein acts as a scaffold for the growth of epithelium.

The effect of the hydrogen-ion concentration value of tan liquors upon the fixation of tannin by these proteins has been studied in industry by Wilson and others. Variable factors affecting the diffusion of tannins in the skin, such as concentration, temperature, and kinds of tannins have also been investigated.

In order to determine the effect of the hydrogen-ion concentration value of tannic acid used in treating burns, two series of experiments were conducted. In the first series, twelve rabbits under anesthesia induced with ether were burned with a hot iron plate and immediately after the burning the burned areas were sprayed with tannic acid solution. Subsequently spraying was done at intervals of about ten minutes for thirteen hours. At the end of twenty-four hours the rabbits were killed and skinned. Each rabbit was sprayed with a different solution. The solutions used were the following:

No.	Tannic acid brand	Strength Per cent	pH value
1	Merck	5	0
2	Merck	5	0.5
3	Merck	10	60
4	Zimmer		2.5
5	Zimmer	5	4.00
6	Zimmer	5.0	5.00
7	Zimmer	5.0	6.00
8	Zimmer	5.0	7.00
9	Zimmer	5.0	8.00
10	Zimmer	5.0	9.00
11	Zimmer	5.0	10.00
12	Zimmer	5	11.00

The first four solutions consisted of pure tannic acid and water. The remaining eight were exactly like No. 4 except for the addition of an increasing amount of sodium hydroxide to increase the hydrogen-ion concentration value to the desired point.

The great degree of edema produced in the tissues by solutions in the acid ranges and the marked disruption and disorganization caused thereby were very definitely shown in the microscopic sections. The best results were obtained at the hydrogen-ion concentration value nearest 7.4. It is conceivable that the edema which results from the use of acid

solutions of tannic acid may augment the shift of fluid from the blood vessels to the tissues which, according to the theory of Underhill, occurs in burns.

On the basis of this experimental work the author uses clinically a solution of tannic acid made with 3.075 gm. of pure anhydrous sodium carbonate, 15 gm. of pure tannic acid, and 500 c.c.m. of water. This solution has a hydrogen-ion concentration value of 7.4. This solution has been used in two very extensive burns. In both, it gave immediate and long results which, in some respects, were superior to those of the 5 per cent aqueous solution of low hydrogen-ion concentration which Seeger employed formerly. The tanning occurred rapidly, the anesthetic effect was the same as that produced by solutions with a low hydrogen ion concentration, and the tanned membrane formed was more pliable than that produced by solutions of the latter type.

In conclusion the author says that the tannic acid solutions used clinically for the treatment of burns since Davidson's introduction of tannic acid for this purpose are strongly acid and highly astringent, tending to cause swelling and edema of the tissues and too rapid fixation of tannin at the surface. These disadvantages are overcome by neutralization to the hydrogen ion concentration value of the blood. Apparently this neutralization is not accompanied by any loss in tanning power. The beneficial effects of tannic acid observed by clinicians are retained by the use of neutral or slightly alkaline solutions.

Norman C. Bricker, M.D.

ANESTHESIA

Brown, G.: Premedication with the Barbiturates. *Med J Australia*, 1932, B, 437

The barbiturates are all primary hypnotics which may depress the respiratory and circulatory systems when given in amounts large enough to produce deep hypnosis.

From his experience with these in all cases the author concludes that barbiturates are capable of reducing fear and psychic shock before operation and are therefore indicated especially in the pre-operative preparation of patients who are extremely nervous. After their use, powerful alcoholic patients take a general anesthetic better, the amount and concentration of the general anesthetic may be lessened, and postoperative discomforts are greatly decreased. Unconsciousness after operation is prolonged and followed by a further period in which the senses are dulled although the patient is responsive. The dosage should be sedative and not hypnotic.

Barbiturates should not be used as the sole anesthetic nor in cases of lung diseases. When renal deficiency is present the dosage should be diminished.

The arrangement of the barbiturates in order of decreasing toxicity is as follows: persecton, barbitalone, luminal, amytal, phenadorm, alonal, dial, and nembutal. The arrangement in order of decreasing

hypnotic efficiency is nembutal, dial, allonal, phanadorm, pernocton, amytal, luminal, and barbitone. The arrangement according to premedication efficiency, judged by minimal disagreeable side actions, minimal hypnosis after operation, and the ratio of effective to lethal dosage is nembutal, dial, allonal, phanadorm, amytal, luminal, barbitone, and pernocton.

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HAROLD M. BRILL, M.D.

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The authors report a study of the effects of cocaine and its derivatives on the vital bulbar centers. They discuss the injection of procain into the spinal canal and into the cisterna magna, the localization of the

action of procain injected cisternally, resuscitation measures, and the difference in lethal dosage in the cases of normal and anesthetized animals. Their experiments were performed on dogs. Each of the dogs was given 5 mgm. of morphine hydrochloride per kilogram of body weight subcutaneously and 25 mgm. of sodium amytal per kilogram of body weight intravenously.

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GEORGE R. McAULIFF, M.D.

PHYSICO-CHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Salotti, A.: First Results of Capillaroscopic, Capillarigraphic, and Tonometric Researches on the Action of Radiations of Various Wave Lengths (Primi risultati di ricerche capillaroscopiche, capillarigrafiche, tonometriche sulla azione di radiazioni di diversa lunghezza d'onda) *Radiol med* 93, XII, 100.

In the normal and pathological conditions studied by the author the reaction to doses close to the erythema dose of various radiations, especially of the ultraviolet and roentgen rays, was always characterized by vasodilatation. The superficial capillaries and the capillaries of the subcapillary net at first became tortuous, then dilated, and then increased in number as the result of the appearance of new ramifications.

The ultraviolet rays attacked the superficial capillaries first whereas the roentgen rays attacked the capillaries of the subcapillary net first. The reaction to the ultraviolet rays was proportional to the dose and was quicker than the reaction to the roentgen rays.

Proceeding the visible changes, tonometry always revealed a varied diminution in the capillary pressure. This was apparently the immediate result of the action of the rays on the sympathetic nerves controlling the vessel tone. The changes in pressure produced by both types of rays were proportional to the visible changes in the capillaries occurring later. A. LOREN ROSS, M.D.

Bistolfi, E.: The Roentgen Treatment of Hemorrhagic Diseases (La roentgenoterapia nelle malattie a sindrome emorragica) *Radiol med* 93, XII, 775, 830.

Bistolfi first describes the general physiopathologic characteristics of diseases with a hemorrhagic syndrome. He then considers the effects of the roentgen rays on the various hematic and vascular factors of hemorrhage and hemostasis, and in this connection reviews and compares the findings of various roentgenologists. He states that, on the whole, roentgen irradiation has a favorable effect on these factors.

In the second part of the article which is devoted almost exclusively to practical applications, Bistolfi analyzes the results reported in the literature and attempts to draw conclusions regarding the method of action of the roentgen rays on the pathogenic factors and the indications for their use in each condition.

Of sixteen cases of hemophilia treated with the roentgen rays, the treatment failed in only one. In three cases treated by the author at the Institute of Radiology and Electrotherapy of the Royal Uni-

versity of Genoa there was marked improvement, but the patients have not been under observation long enough for conclusions as to the end-result. Bistolfi believes that in Verhoff's disease (morbus maculosus, essential thrombopenia of Frank, thrombopenic purpura of Schultz, purpura thrombolytica of Kauselson) roentgen irradiation is worthy of consideration as an adjunct to surgery. In four of his cases in which splenectomy was contraindicated it gave good results. He has had no personal experience with roentgen treatment in hemolytic capillary toxicosis (Schoenlein's disease, Henoch's abdominal purpura), but points out that the reported results have usually been unsatisfactory. In pseudohemophilia of the familial, sporadic type, roentgen therapy usually gives a good temporary result. In the symptomatic forms of hemorrhage (such as those associated with severe infections) few results have been obtained except in gynecological hemorrhage.

For hemostasis in surgical operations, preoperative treatment of the spleen has been found quite efficacious.

In considering the treatment of each disease the author discusses the details of the technique of the roentgen therapy.

The article has an extensive bibliography.

ROBERT T. LARSEN, M.D.

Desjardins, A. U.: Radiotherapy for Hodgkin's Disease and Lymphosarcoma. *J. Am. M. Ass.* 93, XII, 3.

In most cases of Hodgkin's disease the use of rays of medium wave length is distinctly preferable. Lymphoid cells are so sensitive to irradiation that a moderate quantitative dose of rays generated at 135 or 140 peak kilovolts and filtered through either 4 or 6 mm. of aluminum according to whether the nodes irradiated are situated in the subcutaneous tissues or the mediastinum or abdomen is sufficient to induce marked regression of the hyperplasia. Exposure of many areas to rays of this quality may be repeated several times without undue risk, especially if the exposures (courses of treatment) are separated by a period of months.

Roentgen-ray treatment may be given by one of two methods. The irradiation may be confined to regions in which enlarged nodes can be palpated or may be somewhat more general at the outset and later restricted to regions in which fresh lymphosarcoma appears. The first method may be employed in the cases of patients who live nearby and can readily consult the radiologist. Even under these circumstances, however, this method is inferior to the second because experience with Hodgkin's disease and lymphosarcoma teaches that while

lymphoid hyperplasia may appear to be confined to the cervical, axillary, or inguinal nodes, or to two or all three of these groups, more careful investigation or the elapse of a short time often reveals that the mediastinal nodes, and sometimes the abdominal nodes also, are already involved or are becoming involved so quickly that little time could elapse between the irradiations.

The second method of treatment is preferable for the majority of patients who, presenting cervical and axillary, cervical, axillary and mediastinal, or cervical, axillary, mediastinal, and inguinal lymphadenopathy, may be presumed to have or actually have abdominal (mesenteric, retroperitoneal or para-aortic) involvement as well. It consists in irradiating not only groups of nodes demonstrably affected, but also the mediastinal and para-aortic nodes, even when lymphoid hyperplasia in these regions cannot be recognized clinically or roentgenologically. In the average case such a course of treatment requires from six to ten or twelve days, depending upon the general condition of the patient and his ability to tolerate irradiation. A second course of similar treatment should be given three weeks after the termination of the first, and a third course four weeks after the termination of the second. Whether the third course should be as general as the first and second courses depends upon the extent of the disease at the outset and the degree of retrogression which followed the first two courses of treatment.

In the cases of women under thirty-eight or forty years of age exposure of the lower half of the abdomen and the pelvis should be avoided at all times as it is associated with the risk of inducing an artificial menopause which would only tend to complicate the precarious situation.

In the absence of actual or presumptive evidence of abdominal involvement the abdomen should be irradiated only through posterior, paravertebral fields as such irradiation is followed by a less severe systemic reaction than irradiation through the anterior surface of the abdomen.

When once the disease has been brought under control, that is, when once the enlarged lymph nodes have disappeared or retrogressed to the maximal degree, the patient should be instructed to return for examination at intervals of three months. The subsequent examinations should include roentgenological inspection of the thorax for involvement of the mediastinum.

Unless leucopænia is extreme, it is not a contra-indication to treatment. Indeed, unless the leucocytes number less than 1,500 to the cubic millimeter of blood, leucopænia is a peremptory indication. In this condition great caution must be exercised in arranging and administering the treatment. With proper irradiation the number of leucocytes increases, the percentage of hemoglobin rises, and, if abnormally low, the number of erythrocytes also increases.

Dyspnoea, however severe, need not interfere with the treatment. In fact, relief cannot be expected without treatment. However, in the presence of dyspnoea the treatment must be given in daily sessions sufficiently short to avoid a systemic reaction that would tax the patient's strength. If the dyspnoea is related to hydrothorax, the fluid should be withdrawn by thoracentesis before the irradiation. The pleural cavity need not be completely drained, but a sufficient quantity of fluid should be removed to diminish the respiratory embarrassment appreciably.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Friedlander, S. O., and Lenhart, C. H.: Traumatic Shock. *Arch Surg* 1932 xiv 603

The authors report experiments undertaken to determine the cause of traumatic shock. The theory that toxemia is responsible for traumatic shock lacks positive proof, being based on the presumptive exclusion of other factors, especially hemorrhage and the nervous system. The authors doubt that these factors were completely excluded in the experiments reported by Cannon and Bayliss. Parsons and Phemister and Blacklock have produced evidence that the cause of traumatic shock is hemorrhage and fluid loss in the traumatized area.

In experiments carried out by the authors on cats, 150 rapid blows with a wooden mallet on one posterior extremity produced a typical blood-pressure curve characterized by a rapid fall, a rapid partial recovery, a level latent period, and a slow decline with secondary shock. These experiments were controlled by others in which studies were made of the effect of denervation by section of the cord, the peripheral nerves, and the sympathetic chain; the production of rapid hemorrhage of similar quantity to that accompanying the trauma; the induction of asystole and the ligation of arteries.

Hemoglobin determinations during the shock experiments always showed a definite diffusion similar to that following acute hemorrhage. The effects of trauma seemed to be more severe than those of acute hemorrhage only because the trauma was associated with greater fluid loss due to edema. The authors conclude that local fluid loss and hemorrhage are sufficient for the development of traumatic shock. E. S. PLATT M.D.

Harkins, H.: Granulopenia and Agranulocytic Angina. *J Am Med Ass* 93 xix, 3

In 1925 Schultz reported six cases of fatal leucopenia and granulopenia associated with necrotic pharyngitis.

A modification of the Roberts and Krack classification of granulopenia is as follows:

1. Primary granulopenia—agranulocytic angina
2. Secondary granulopenia due to
 - a. Chemical poisons.
 - b. Irradiation.
 - c. Sepsis.
 - d. Blood diseases such as pernicious anemia, aplastic leukemia, and aplastic anemia.
 - e. Infections such as measles, mumps, influenza, typhoid fever and malaria.

It is possible that eventually all cases will be considered secondary.

Thirty-six cases of recurrent granulopenia have been reported. Few of the patients who were under observation for a long time are now alive. One patient has had periodical attacks every three weeks for twenty years. In another patient the recurrences corresponded to a certain extent with the menstrual periods. Cyclic variation of the leucocytes has been noted in normal subjects as a daily variation.

In the last seven years seventeen cases of granulopenia have been treated at the University of Chicago Hospital. Eight were classed as primary. The others were secondary to sepsis, aplastic anemia, leukemia, irradiation or amphotericine. The histories of these cases are reported.

Harkins believes that the oral lesions and sepsis are secondary to the granulopenia as the white count is low before the lesions develop. Precipitating factors include tonsillectomy, dental extractions, and other trauma to the mucous membrane. There may be also some endogenic factor such as allergy, an endocrine disturbance, or congenital deficiency of the bone marrow. The presence of hypo-eosinophilia is suggestive of allergy, but does not rule out sepsis. Primary granulopenia is more common in adults than in the young and in females than in males. It occurs most frequently in persons in the higher strata of society and possibly also in persons with peptic ulcer disease.

Exogenous factors acting on normal persons or persons with special susceptibility may be responsible. Among the possibilities are the bacillus anthracis, unknown organisms, and chemical poisons. The chief factor may be sepsis of the bone marrow rather than peripheral destruction of cells. The cause of the disease acts chiefly on the bone marrow.

Treatment with ointments seems to be of some benefit. Blood transfusion and roentgen irradiation are of no proved value. Oral antiseptics delay the entrance of pathogenic bacteria. If sepsis is too far advanced, attempts to increase the white cell count will not save the patient's life. E. S. PLATT M.D.

Petit Dutilleul, D., Lathoricia, R., and Lathrie, A.: Omniprison Phlegmons of the Face of Dental Origin. (*Les phlegmons gangreneux de la face d'origine dentaire*). *Pres Méd Par* 1932 x, 1194

Although Ludwig's angina has long been recognized, gangrenous infections of the face from the same cause are little known. The latter often start with little pain, progress rapidly and end in septicemia in spite of radical treatment. The authors report two cases in which the condition was due to a dental infection. In both, operation revealed edema and gangrene but no pus. One of the

patients died a few hours later. The other was cured. Gas-gangrene serum, neosalvarsan, and blood transfusions were used as accessory treatment. A similar case reported in the literature is reviewed.

In these three cases the point of origin was a second molar or wisdom tooth. When the infection starts in the upper jaw it rapidly extends externally, but when it arises in the mandibular area it is delayed. In the upper jaw the gangrenous infection usually spreads along the alveolar borders of the bone and the gingival furrow and is at first intra-oral. At this stage the first operations are usually done. To invade the cheek, the infection has only to traverse the fibers of the buccinator which are inserted near the alveolar border of the bone. From this point it spreads into the masseter, the parotid, or even the submaxillary region and involves the face from eye to chin. This is the stage when most second operations are performed.

Starting from the mandible, the infection seems to spread toward the temporal fossa or the neck as in Ludwig's angina and shows little tendency to appear on the outside of the face.

The early symptoms are interpreted by the patient as toothache and may be attributed by the dentist or physician to a simple dento-alveolar periostitis. When a tooth is extracted, gangrenous tissue is found beneath it and no trace of decay is discovered in the tooth itself. The rapid progress of the infection confirms the diagnosis of gangrenous phlegmon. High initial fever, severe pain, rapid spread of the œdema, and dilatation of the veins are warning symptoms. Gaseous crepitation in the skin or an abnormal tension of the skin over the temporal region may be noted.

The treatment is surgical. The cheek should be widely opened. Incisions inside the mouth as with a histoury are dangerous and futile as they open more lymphatics or blood vessels and favor a fulminating septicæmia. Local and general anæsthetics are contra-indicated. The operations should be performed with the cautery. The patients suffer very little as they are severely intoxicated by the infection and anæsthesia is induced by the pressure of the gas in the tissues. Two or three facial incisions should be made parallel with Stenson's duct—one above the duct, one below it, and, if necessary, a third at the lower border of the mandible. At least one incision should open into the mouth cavity. In the intervening spaces punctures with the cautery are of some value and drains may be passed through the various openings.

In the temporal fossa this drainage is difficult on account of the heavy temporal fascia. Therefore resection of the zygoma may be necessary. Anti-gangrene and antistreptococcus serum should be given.

KELLOGG SPEED, M.D.

Macklin, M. T. Is the Increase of Cancer Real or Apparent? *Am J Cancer*, 1932, xvi, 1193

In 1901 the number of deaths from cancer per 100,000 persons in all Canada was 46.8. In the next

two decades it rose to 75, an increase of 62 per cent. Various arguments are put forward by those who do not admit a real increase. They state first that the age of death has been raised so that more people now live to the cancer age than formerly. In this connection they point to the great saving of the lives of infants by social and medical agencies. Their second argument is that, as a result of improvement in diagnosis, a greater number of cases of cancer are being diagnosed today than formerly. According to their third argument, the increasing accuracy of vital statistics tends to increase the number of deaths attributed to cancer. A fourth argument which might be presented is that many more persons are attended by physicians today than in 1901.

In an investigation of the incidence of cancer in Canada during the period from 1901 to 1921, the author divided the population into the following 3 age groups: (1) persons under forty, a group in which cancer is relatively unimportant, (2) persons between forty and sixty, a group in which a sudden increase in the incidence of cancer occurs, and (3) persons of sixty years and over, a group in which cancer is even more important as a cause of death than in the second group.

The cancer rate was calculated separately for these 3 groups on the basis of the number of cancer deaths in the group per 100,000 persons in that group. By such a division into groups it is possible to determine whether the increase in the cancer rate has merely kept pace with, or has exceeded, the increase in the population at the higher age levels.

The average age at which cancer claims its victims does not appear to be decreasing. While it is possible that the incidence of the condition below the age of sixty years might be higher than formerly without a decrease in the average age incidence, this is seen not to be the case. There can be no doubt that cancer is increasing at a rate far in excess of the average increase in the population which is reaching the cancer age.

Better diagnosis is undoubtedly an important factor causing the cancer rate to appear higher as the years go by, but it cannot be the sole cause as cancers that could scarcely go undiagnosed even by the laity, such as cancers of the lip, have shown a tremendous increase. Better diagnosis and more accurate statistics, which would be very apt to affect equally the cancer rate in all 3 groups of the population did not uniformly raise the cancer rate in the group under the age of forty years. This affords us an index as to the part played by better diagnosis and more accurate statistics in the 2 other groups. It seems fair to state that they undoubtedly play a rôle, but that it is not a major rôle inasmuch as they did not increase the cancer rate in persons under forty years of age.

Not only does preventive medicine bring more people to the cancer age, but it keeps them from dying of preventable causes after they arrive at that age. Accordingly it is inevitable that the death rate from diseases which are not preventable at present

will increase. The cancer rate might justifiably be used as an index of the state of preventive medicine and sanitation. It is the saving of lives after the cancer age that has been perhaps the greatest factor in the increase of deaths due to cancer.

Cancer is increasing, and it is increasing particularly after the age of sixty. We have won more ground from the ravages of infectious disease than we have lost to those disorders which are dependent upon inherent qualities in the chemical and physical makeup of individuals. Cancer is increasing because, as the result of preventive methods, a larger population grows old and, having grown old, is kept from dying of those ills from which it formerly suffered. With each increase in the warfare against preventable diseases there will be an increase in the ravages from cancer. With each victory there remains a greater population to die from that disease.

While these conclusions are based upon the statistics of Canada, there is strong ground for the belief that they would be supported by a similar analysis of the statistics of any other country. It is true that there may be racial differences in immunity to cancer, but the author concludes that, regardless of such differences, excellent public health measures and high cancer rates are inseparable, at least for the present.

JOSPH K. NARAT, M.D.

Broders, A. C. *Carcinoma in Situ Compared with Benign Penetrating Epithelium.* *J. Am. M. Ass.* 93, 1921, 670.

The entity called carcinoma or cancer regardless of etiology, is a primary disease (epithelial cells). All other phases and sequelae, although of great importance, are in reality of a secondary nature.

Carcinoma in situ is a condition in which malignant epithelial cells and their progeny are found in or near positions occupied by their ancestors before the ancestors underwent malignant transformation. In adenocarcinoma *in situ* the malignant cells often completely replace the non-malignant cells in what were once normal acini, ducts, or tubules.

The diagnosis of carcinoma *in situ*, as of carcinoma in general, is based chiefly on altered cellular characteristics in contradistinction to cellular situation. Carcinoma *in situ* may be of any type, such as squamous-cell carcinoma, basal-cell carcinoma, or adenocarcinoma. It may occur in any situation in which carcinoma arises and it may be of any degree of malignancy. It is particularly noticeable in Paget's disease of the breast and of the extramammary epidermis, a condition characterized microscopically by the presence of so-called Paget's cells. Broders digresses here to consider briefly Paget's disease. In Paget's disease of the breast there is usually but not always, an associated adenocarcinoma of the deeper portions. Paget's carcinoma is observed in the epidermis of the nipple and areola and in advanced cases, may involve the periareolar epidermis for some distance. It also involves the lactiferous ducts of the nipple.

Other examples of carcinoma *in situ* are the secondary cytoplasts noted by MacCarty and the so-called precancerous dermatosis of Bowen. The condition may also be found associated with senile keratosis, senile keratosis, chemical dermatitis, actinodermatitis, and xeroderma pigmentosum.

If, in a specimen obtained for biopsy carcinoma *in situ* is associated with infiltrating carcinoma, there is little chance of missing the diagnosis of carcinoma.

Benign penetrating epithelium is characterized by non-malignant hyperplasia that results from response to a stimulus. Benign penetrating epithelium is observed in healing wounds, chronic ulcers, a phase of simple chronic inflammation, and gonorrheal conditions such as tuberculosis, syphilis, blastomycosis, and actinomycosis. It occurs also as the result of stimulation by various chemical irritants. Some pathologists contend that epithelium which has penetrated beyond the junction of the epithelium and connective tissue, or so-called basement membrane, should be considered malignant. As a result of this misinterpretation the patient is subjected to unnecessary treatment.

It seems pertinent to state that the day has passed when epithelium can be considered non-carcinomatous or at most only precarcinomatous because it is within the confines of the so-called basement membrane and carcinomatous because it has penetrated beyond this barrier. It is therefore imperative that the microscopist take into consideration the character of the epithelial cells above everything else in order to arrive at a correct diagnosis.

Rosenstein, P. and Wollsohn, C.: *Conservation in Surgery* (Urban and Schwarzenberg in *de Chirurgie Therap. d. Gegenwart* 1923, 1221, 51).

The authors praise the efforts of the present-day surgeon to return to the greater conservatism which prevailed a few decades ago. Wollsohn shows how operations on the stomach, the biliary passages, varices, and the uterus are becoming more conservative because the reactions to them were too severe. On the other hand new fields of surgery have been opened up, as, for example, in the treatment of injuries in carcinoma, in which the operative possibilities are being extended in aseptic conditions and in conditions requiring plastic procedures.

The good surgeon has a knowledge of the structure and physiologic-biologic function of normal tissues. Therefore, in order to avoid incisions, he is very sparing in the use of tampons and drains. He does not make large incisions or expose important lengths of tendon. He does not tampon joint cavities and he limits the use of tampons in the chest and abdominal cavities as much as possible. Modern vaccine treatment yields many cures without operation. Bacteriologic teachings regarding hyperemia and artificially produced congestion have prevented many operations on tuberculous patients. The operative cure and heliotherapy are also a part of the armamentarium of the conservative surgeon. The German cure which is still disputed, but is undoubtedly an

successful in lupus, has made it possible to avoid operation. Roentgen and radium irradiation treatment have likewise proved of value. Insulin has made possible the preservation of many limbs which previously would have been amputated. Wolfsohn discusses also chemotherapy and the autohemotherapy of Laewen. In conclusion he states that the answer to the question whether operation should be performed or not depends upon the indications and especially upon the physician's knowledge.

The second part of the article is a discussion by Rosenstein. Rosenstein says that in cases of mastitis he hardly ever finds it necessary to operate since he has been using chemotherapy. In more than 300 cases he has succeeded in rendering the infected breast free from bacteria and preserving its function by injecting a $\frac{1}{2}$ to 2 per cent solution of rivanol. The results of this treatment have been equally good in periprostatic abscess. In pleural empyema they have been less satisfactory, but in septic pyelonephritis they have been good. In the latter condition, Rosenstein opens the abscess and injects rivanol as far as the kidney pelvis. He has been able to save many kidneys in this manner. Surgery for tuberculosis, surgery of the extremities, and the treatments of Bier and Gerson are illustrated by case reports. In cases of varices, good results have been obtained by the use of injection treatment. Even in intestinal occlusion a conservative attitude may be advisable as the condition may be due to a transient spasm. The most severe disturbances of peristalsis may be controlled by the injection of nicotine into the coeliac ganglion. In ulcer of the stomach operation should be performed only when it is definitely indicated, as by hemorrhage, obstinate colic, or the phenomena of stenosis. Removal of the ulcerous colon has been abandoned for temporary colostomy. Conservative treatment has been particularly successful in urology. It is now used in cases of kidney stone and hydronephrosis. Nephrotomy is seldom done. Rosenstein regards prostatectomy as a conservative method of treatment as it removes only diseased tissue.

VOGELER (Z)

GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

Mac Neal, W. J., and Frisbee, F. C. Bacteriophage as a Therapeutic Agent in Staphylococcus Bacteremia. *J Am Med Ass*, 1932, xcix, 1150.

It has been possible to produce a staphylococcus bacteriophage which is highly potent against a large majority of the staphylococci found in infections of the blood stream and to prepare this agent in a nearly protein-free asparagin culture medium.

The asparagin medium is made by dissolving 3 gm of asparagin, 2 gm of magnesium sulphate, 4.5 gm of sodium chloride, and 2 gm. of dipotassium hydrogen phosphate in a liter of distilled water. This mixture is brought to a boil and the hydrogen-ion concentration then adjusted to 7.6 by adding sodium hydroxide. The medium is next autoclaved

at a pressure of 15 lb for fifteen minutes, and after being filtered and tubed is autoclaved a second time at a pressure of 15 lb for thirty minutes. The final hydrogen-ion concentration should be from 7.0 to 7.2.

The use of the bacteriophage by external application, subcutaneous injection, and, above all, intravenous injection in a series of fifteen cases of staphylococcus bacteremia was followed by recovery in seven cases and death in eight.

The treatment is not a simple procedure, and the course of the disease before recovery is quite prolonged.

Bacteriophage is a remedial agent which, when carefully and intelligently employed, may be expected to assist somewhat in the treatment of staphylococcus bacteremia, a disease which must still be regarded as extremely grave.

HOWARD A. MCKNIGHT, M.D.

DUCTLESS GLANDS

Leriche, R. The Future and Significance of Surgery of the Parathyroids (*L'avenir et la signification de la chirurgie des parathyroïdes*). *Presse méd.*, Par., 1932, xl, 1133.

In reviewing the facts revealed by surgery of the parathyroids and discussing the future of this branch of surgery, Leriche reports four illustrative cases.

The first case was that of a woman sixty years of age who sought treatment for a very painful scleroderma of the feet and legs from which she had been suffering for twenty-three years. The calcium content of the blood serum was 11.2 mgm per 100 c.cm. After resection of the terminal segment of the right inferior thyroid artery with its branches and a small mass of tissue which appeared to be a parathyroid the symptoms were completely relieved and the calcium content of the blood serum fell to 7.8 mgm per 100 c.cm.

As it is known that functional suppression of one parathyroid in the presence of hypercalcemia is regularly followed by re-establishment of the normal calcium content of the blood, Leriche concludes from the results in this case that calcium equilibrium is necessary for normal circulation. The restoration of the warmth of the extremities was identical with that produced by sympathectomy. Leriche believes that this case proves a close relationship between the parathyroids, the calcium equilibrium, and the nutrition of the tissues.

The second case reported was that of a man fifty-two years of age who had a violaceous keloid in the sternal region. This lesion had appeared spontaneously three years previously and had recurred after excision. The calcium content of the blood was high. Immediately after removal of the right inferior parathyroid the keloid flattened out, became smaller, and changed its color, but in a few months it resumed its original aspect.

As keloids have been shown to consist of young connective tissue, Leriche suggests that the retro-

gression of the keloid in this case a few hours after reduction of the blood calcium by parathyroidectomy may indicate that under normal conditions a certain calcium equilibrium is necessary for the normal growth of connective tissue.

The third case reported was that of a man of forty years who for eleven years had had a spinal ankylosis and great restriction of the movements of many peripheral joints. For several months he had been bedridden. The calcium content of the blood was 12.7 mgm. per 100 c.cm. A few hours after removal of the right inferior parathyroid the pain in the joints ceased and the patient was able to sit up in bed. The next day he got up and walked a few steps. Ultimately all of the joints which were not fused anatomically regained motion.

From the results in this case Leriche concludes that the subcutaneous sensibility in joints which governs movements and equilibrium is influenced by the calcium content of the blood, and that a normal calcium content is necessary for satisfactory function of the joints.

The fourth case reported was that of a man twenty years of age who had had two fractures of the clavicle, one six years and the other three years previously and had recently developed a hemarthrosis of the knee as the result of a fall. Roentgen examination of the knee unexpectedly revealed a large cavity in the lower end of the femur and roentgen examination of other parts of the skeleton disclosed, in various bones, numerous spots of fibrocystic disease such as are found in von Recklinghausen's disease. The clavicles were normal. The calcium content of the blood was high. Parathyroidectomy was done. On macroscopic examination, the removed gland appeared normal. No adenoma of the parathyroids was discovered. Biopsy on the tibia confirmed the diagnosis of osteofibrosis. The operation was followed by improvement in the patient's general condition and color but after four months there was no apparent change in the bone cavities except at the site of the biopsy where recalcification had occurred.

Leriche suggests that parathyroid hypertrophy in von Recklinghausen's disease may be secondary to the mobilization of calcium. In support of this theory he cites Loewy's observation that when dogs are deprived of their bile for a long time they become osteomalacic and the parathyroids are found hypertrophied at necropsy.

The recalcification at the site of the biopsy is ascribed by Leriche to the local liberation of calcium when the bone was cut.

The manner in which the parathormone acts is still unknown. The four cases reported by the author had as common factors hypercalcemia and a favorable reaction to parathyroidectomy. Leriche urges more study of the results of operation in clinical cases as the findings of experiments on animals are not always applicable to human beings.

Leriche believes that all of the pathological effects of hyperparathyroidism are exerted on the con-

nective tissue and bones. While it is evident that the parathormone acts as a liberator of fixed calcium, the manner in which it so acts is still obscure. The rôle of the circulation in decalcification is even less understood, but it is known that whenever the circulation is increased in the region of a bone, the bone undergoes rarefaction. Accordingly both disturbances of the parathyroids and disturbances of the vasomotor system may cause rarefaction of bone. The depositing of excess calcium in some parts of the skeleton in cases of hyperparathyroidism is the result of bone rarefaction in nearby areas. New bone is always formed at the expense of old bone.

The cases reported above also show that the circulatory reactions after parathyroidectomy are the same as those following sympathectomy. In certain osteo-articular diseases with decalcification there are the same peritarticular pains, pain on movement, and functional impotence as in progressive polyarthralgia all of which cease suddenly a few hours after a regional sympathectomy. The active hyperemia which follows all sympathectomies produces in these types of arthritis the same effect as that produced by parathyroidectomy in polyarthralgia. The pathological phenomena seem to be of a similar character. These observations suggest that parathormone has a close relationship to the circulation and vasomotor control.

In conclusion Leriche says that the surgery of the parathyroids is a sort of physiological surgery of the connective tissues and its future is well worth investigation.

KILLIAN STERN, M.D.

SURGICAL PATHOLOGY AND DIAGNOSIS

Villarot, M., and Danoffo, H.: *Some Clinical Examples Showing the Value of Measurement of the Peripheral Venous Pressure in Diagnosis, Prognosis, and Treatment* (Quelques exemples cliniques montrant l'intérêt général de la pléthysmométrie au point de vue du diagnostic, du pronostic, et de la thérapeutique). *Presse méd. Par.* 1931 41: 1477.

The authors describe an instrument which they have devised for measuring the peripheral blood pressure and the technique of its use. The normal peripheral venous pressure is about 15 cm. of water in man and 3 cm. of water in woman. By itself, the venous pressure, like the pulse count, is not of extremely great significance, but in association with the arterial pressure it constitutes an accurate criterion of the return circulation.

Cases showing the various conditions in which measurement of the peripheral venous pressure gives valuable clinical information are cited. Well-compensated valve lesions do not cause any change in the peripheral venous pressure, but a rise in this pressure is one of the first signs, if not the first sign, of failure of the myocardium. Venous hypertension indicates insufficiency of the right cavities, as typical failure of the left heart sometimes occurs without a rise in the venous pressure. Often definite and irreducible asystole is preceded for a long time

by venous hypertension. Care should be taken in interpreting cyanosis and dyspnea if they are not accompanied by venous hypertension as under such circumstances they may indicate lung lesions rather than failure of the right heart.

Pressure on the superior vena cava caused by mediastinitis or adenopathy may be diagnosed by measuring the venous pressure in the arms.

The authors report a case in which an aneurism of the aorta was diagnosed from a difference in the venous pressure in the right and left arms. Stethoscopic examination had revealed no signs of aneurism. While the condition might have been disclosed by roentgen examination, it was much easier to determine the venous pressure at the bedside than to take the patient to a roentgen laboratory.

Hypertension in the inferior vena cava is revealed by a rise occurring in the pressure in the saphenous veins while the pressure in the arm veins remains normal. This fact is of special importance because the clinical syndrome of hypertension in the inferior vena cava is less marked than that of pressure on the superior vena cava.

Determinations of the venous pressure are of value also in differentiating between essential varices and symptomatic varices resulting from pressure on the inferior vena cava. The latter are accompanied by localized venous hypertension, whereas true varices are accompanied by venous hypotension when the patient is lying down.

Measurement of the venous pressure may show also the extent to which a collateral parietal circulation is functioning.

Portal hypertension causes hypotension in the superior vena cava with hypertension in the inferior vena cava when the ascites begins to affect the latter vessel. In cirrhosis without a heart lesion the hypotension of the vena cava is manifested by a decrease in the peripheral venous pressure in the arm, which may become even more marked immediately after paracentesis. When a heart lesion is present there is venous hypertension in the arms. This permits the conclusion that the cirrhosis is a cardiac cirrhosis or that the ascites is due to a disturbance of the general return circulation, a conclusion which can be confirmed by the results of general heart-tonic treatment.

In mediastinitis from pressure on the superior vena cava or its branches the venous pressure in the arms is generally high. A comparison between the figures for the upper and lower limbs will show whether the hypertension is caused by a purely mechanical stasis or whether there is also a deficiency of the right auricle. In the presence of a deficiency of the right auricle the venous pressure in the legs is also raised.

In pericarditis the venous pressure is not changed if the myocardium is not affected. The authors report a case in which roentgen examination suggested dilatation of the heart, but as such a diagnosis was contra-indicated by venous hypotension, a diagnosis of dry pericarditis was made. This diagnosis was confirmed by the results of novarsenobenzol treatment, which would have been contra-indicated in dilatation of the heart.

AUDREY GOSS MORGAN, M.D.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THE ISSUE OF WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

SURGERY OF THE HEAD AND NECK

Head

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INTERNATIONAL ABSTRACT OF SURGERY

MARCH, 1933

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Frantz, V. K., and Stix, L. Adamantinoma A Case of Fifty-One Years' Duration *Arch Surg*, 1932, xxi, 890

A woman thirty-two years of age was admitted to the Roosevelt Hospital, New York, complaining of a lump in the lower jaw on the right side. Seven years previously, following the extraction of a carious tooth, the jaw began to swell gradually. There was no pain or tenderness. Four and a half years later the tumor had reached a large size. The neoplasm was circumscribed and limited to the center of the jaw. It hung down so that it touched the shoulder when the patient turned her head. It was removed surgically, a small shell of bone being left on the lower edge of the jaw. For a year after the operation, sequestra of bone were discharged spontaneously. Pain began eight months after the operation and persisted. Nine months before the patient was admitted to the Roosevelt Hospital the pain was somewhat relieved by the surgical drainage of a large abscess situated posterior to the jaw. Thereafter the tumor steadily increased in size.

Physical examination disclosed an irregular swelling of the lower jaw on the right side, which extended from the back of the ramus of the jaw behind and the coronoid process above, downward and forward nearly to the median line, and was attached to the inferior maxillary bone. The neoplasm was somewhat coarsely nodular and projected mostly downward and outward. On the inside of the mouth it projected upward above the natural level of the teeth, outward sufficiently far to push out the cheek, and somewhat inward so that it slightly displaced the tongue to the opposite side. Within the mouth it was lobulated and covered with mucous membrane. It extended back inside the mouth onto the ramus, but could not be felt to involve the pharynx. The skin over it was not adherent or red. No enlarged glands could be felt about the tumor, and there was no facial paralysis or dysphagia. There

was a constant discharge which became worse when the patient reclined. The discharge came from two sources, one anterior and the other posterior. Movement of the jaw was not painful.

Operation was performed under ether anaesthesia. The incision was made from a little below and anterior to the external auditory meatus along the lower edge of the jaw, 1 in. from the midline. Dissection was done down to the tumor, which was very vascular, and the bleeding was controlled. The canine and first bicuspid teeth were extracted. The jaw was divided at this point and the parts along the floor of the mouth were dissected away from the tumor, the knife being kept close to the bone. During this procedure the administration of ether was discontinued. When the coronoid process was dissected out it was found to be small and imperfect. The joint was dissected out and the jaw removed.

In spite of this radical treatment, the tumor soon began to grow again in the left mandible and continued to enlarge almost up to the time of the patient's death in her seventy-sixth year of age. Six or eight years before her death the tumor was treated with radium implantations. For two weeks before her death it discharged a foul fluid and decreased in size. At all times it was entirely painless.

At autopsy, the mass was removed with what remained of the left mandible. No secondary masses were found in the vicinity, and there was no suggestion of metastases to thoracic or abdominal viscera.

In the fixed state the specimen consisted of a rounded mass of firm consistency measuring about 11 by 13 by 14 cm. and weighing 950 gm. The greater part of its surface was covered with skin. At one end there was a portion of the condyle and ramus of the lower jaw. On its lower aspect there were two ulcerated areas which led into deep cavities. On cut section, irregular masses of bone were found extending throughout the specimen. Each cut section showed a large number of separate cyst-like cavities from 1 to 3 cm in diameter. Cloudy fluid material and debris were found in these cavi-

ties. Between the cyst like cavities, there was solid, more or less homogeneous tissue except at the center of the tumor which consisted of a mass of extremely friable foul-smelling debris.

On microscopic examination the specimen showed an alveolar structure. There were strands of rather densely packed, darkly staining epithelial cells. There were also larger masses of these cells, the more peripheral of which were columnar and arranged radially in a palisade layer. The central cells of the larger masses were less closely packed and stained more deeply. Some of them seemed to be connected with bridges, which gave them a roughly stellate appearance. In places these central cells were necrotic, showing faded nuclei and cloudy cytoplasm. In others, they had disappeared and had left small cystic spaces. The strands and masses of epithelial cells were separated from each other by strands of fibrous connective tissue, some of which contained small spicules of well-developed bone. The darkly staining epithelial cells and the central stellate cells resembled closely in both appearance and relationship the ameloblasts and the cells of the stellate reticulum of the embryonal enamel organ.

JOSEPH E. NARAY, M.D.

ERY

Fagston, A. A.: The Use of Tuberculin in the Diagnosis and Treatment of Ophthalmology. *Arch. Ophth.*, 1932, vii, 671.

The author reports on tuberculin tests made in the six years from 1926 to 1931. Of the total number of nearly 2,000, 55 per cent were negative. The number of tuberculin treatments given with bacterial emulsion in the last half of the same period of time was over 18,000. The general rule has been to give the treatment every three or four days, beginning with 0.001 mgm. and slowly increasing the dose so that 0.005 mgm. is given at the tenth dose and 0.01 mgm. at the nineteenth dose. After the twenty-seventh dose a short rest is allowed, and when the treatment is begun again 0.001 mgm. is given and the dose slowly increased to 0.9 mgm. Another rest is then given, and when the treatment is resumed 0.01 mgm. is given and the dose slowly increased to 1 mgm. which is repeated every three or four days for a year. Provision is made for individual variations.

The various conditions (33 different diagnoses) for which tuberculin was used and the results of extended treatment are discussed.

The author concludes that in the presence of active involvement by the tubercle bacillus tuberculin does no good or is contra-indicated, but when allergy is present, it is of great value in desensitizing the patient.

THOMAS D. ALLER, M.D.

Town, A. E., and Friess, F. C.: Bacteriophage in Ophthalmology: A Preliminary Report. *Arch. Ophth.*, 1932, vii, 652.

The authors review the origin of the conception of bacteriophage and the growth of our knowledge of

the organism. They believe that the bacteriophage will prove a very valuable therapeutic agent in ophthalmology. They warn of its specificity and call attention to the fact that some bacteria do not seem to have a bacteriophage. In conclusion they state that in the use of the bacteriophage co-operation with the laboratory is essential.

THOMAS D. ALLER, M.D.

Boeck, J.: A Contribution on Periarthritis Nodosa in the Eye (Eia Beitrag zur Periarthritis nodosa am Auge). *Zisch. f. Augenheilk.*, 1932, lxxvii, 21.

In the case of a man thirty-seven years old who showed clinical evidences of diabetes mellitus, myocardial degeneration, foci of involvement in the lungs, and angiospasm in the extremities and in whom periarthritis nodosa was suspected, ophthalmoscopic examination even four days before death revealed no abnormality. At autopsy, either macroscopic or microscopic study revealed the typical changes of periarthritis in practically all of the internal organs and the skeletal muscles as well as both eyes. The ciliary arteries were involved in their entire extent, but the retinal vessels were not affected. The arteries showed the characteristic nodular circumferential, severe inflammatory infiltration of their walls with necrosis in the media and a subendothelial exudate. Sometimes there was only lymphocytic infiltration in the outer layers of the vascular wall. Some of the choroidal arteries exhibited a thickened fibrous wall. Occasionally there was endarteritis of a proliferative or obliterating type, considered to be the last stage of the disease. Particularly noteworthy were severe changes in the circulus arteriosusialis major on the left side; this caused no clinical manifestations except an increase in the albumin in the aqueous humor.

In another case which is reported in detail, that of a seventeen-year-old boy with periarthritis nodosa, sepsis, and renal injury detachment of the retina occurred in both eyes, but finally became cured after the formation of slightly pigmented striae and foci of choroiditis. A sclerotic nodule developed temporarily. After recovery from the retinal detachment, examination revealed optic neuritis and constrictions and fluctuations in the caliber of the retinal arteries. It was impossible to decide definitely whether the eye changes were due to the renal injury or the periarthritis nodosa. The detachment of the retina might have been induced by exudative processes brought about by the disease of the choroidal arteries, and the changes which became visible later in the retinal vessels might have been due to the disease of the vascular walls caused by the periarthritis nodosa and may possibly have been fibrous foci such as are found in the internal organs after periarthritis nodosa. Opasano (1).

Gifford, E. R.: The Alabach Operation for Ptosis. *Arch. Ophth.*, 1932, vii, 495.

Operations for ptosis in which an attempt is made to correct the deformity by establishing a more lat-

mate relation between the lid and the frontalis muscle are well represented by the Machek technique. The effectiveness of this operation in a given case is governed by the portion of the lids from which the flaps are made and the length of the flaps in relation to their ultimate pull on the canthal ligaments. Of the utmost importance is the dressing of the wound. Gifford recommends the use of a cone of X-ray film cleansed of its emulsion and bound at the sharp edges by adhesive as described by O'Brien. This cone permits observation of the cornea, and when secretion is present may be easily removed for cleansing of the eye. VIRGIL WESCOTT, M.D.

Doherty, W. B. Ocular Papillomata. *Am. J. Ophthalm.*, 1932, xv, 1016

Ocular papillomata are made up of clusters of small pinkish papillae and have a raspberry, cauliflower, or mushroom appearance. They are attached to their base by a firm pedicle and are freely movable. They have a rich blood supply and bleed easily. Those of the flattened mushroom type are probably produced by the pressure of the upper lid, and those with the raspberry appearance are the tumors capable of protruding through the palpebral aperture.

The tumors occur most frequently at the inner canthus and the corneoscleral margin. In the cornea proper they are rare. Papillomata of the marginal variety can be best explained by an epithelial genesis, while those developing in the cornea are probably caused by an inflammatory process. As the development of the neoplasms is favored by the vascularization brought about by inflammatory and traumatic processes, ocular injuries and prolonged irritation are causative factors.

The tumors are capable of malignant degeneration. Therefore a most careful examination of sections should be made for malignancy. Even when a growth appears clinically and histologically to be a papilloma, its removal should be followed by repeated examinations of the eye and a careful search should be made for malignancy in other parts of the body.

Ocular papillomata are best removed by operation. The surgical treatment should be followed by irradiation with radium. The radium should be employed with great caution and only by one who is skilled in its use and who thoroughly understands the possible ocular complications.

The author reports two cases.

LESLIE L. MCCOY, M.D.

Loginov, G. Orbital Phlegmon with Septic Thrombosis of the Cavernous Sinus (Zur Kasuistik der orbitalen Phlegmonen mit septischer Thrombose des Sinus cavernosus). *Soviet review of ophthalm.*, 1932, i, 79.

Phlegmon of the orbit complicated by fatal septic thrombosis of the cavernous sinus is rare. The two cases reported by the author are of particular interest because a histological study was made of the eye, the optic nerve, and the optic chiasm.

In the first case, that of a woman twenty years of age, the condition began with a furuncle of the lip. The inflammatory process, accompanied by marked oedema of the side of the face, extended to the left orbit. There was a pronounced protrusion of the eyeball, the eyelids and conjunctiva were extremely oedematous, the movements of the eye were greatly restricted, and there was cervical rigidity. The temperature ranged from 39.0 to 40.0 degrees C.

Following incision and drainage of the furuncle of the lip the condition was somewhat improved. Later it became worse and the right eye began to protrude. Incision along the lower border of the orbital cavity and on the cheek released a large amount of pus. The symptoms of meningeal involvement developed and death occurred on the seventh day after the operation.

Autopsy disclosed a phlegmon of the face and orbit, chronic pachymeningitis, serous haemorrhagic leptomeningitis, and thrombosis and suppuration of the right cavernous sinus. Of particular interest was the crossed thrombosis from the left eye to the right sinus. The optic nerve was very extensively infiltrated and further back it contained an abscess. The surrounding tissues were necrotic and contained several abscesses. In the chiasm there were areas of softening with infiltration. The eyeball showed few changes. In the retina there were haemorrhages. In the vasculature there were three foci of infiltration which were visible under the retina. The infiltration extended forward to the lamina cribrosa and backward to the point where the optic nerve entered the orbit. These findings explain the blindness.

The second case was that of a fifty-two-year-old man who was seized with pain in the region of the nose without any apparent cause. That evening he had a severe headache, the skin of his forehead became oedematous and reddened, the eyelids became swollen, and sight was lost in the right eye. The temperature was 39.5 degrees C. The eyeball protruded. The general condition became worse, meningeal symptoms developed, and the left eye also became oedematous. A diagnosis of purulent meningitis, thrombosis of the cavernous sinus, phlegmon of the right orbit, and thrombophlebitis of the left orbit was made. The patient died. Autopsy confirmed the diagnosis and disclosed a nasal furuncle as the starting point of the trouble. In this case microscopic examination of the optic nerve and chiasm failed to disclose pathological changes.

In both cases the staphylococcus aureus was demonstrated. SCHAACK (O)

Spiegel, E. A. The Physiopathology of the Voluntary and Reflex Innervation of Ocular Movements. *Arch. Ophthalm.*, 1932, viii, 738.

This is a very technical article in which anatomical and physiological facts are cited to explain the results of controlled animal experimentation. Similarities and differences are noted between the effect of stimulation of frontal, occipital, and temporal lobes on the movement of the eyes, and the effect of

removal of portions of the cerebrum and peripheral nerves or their muscles are discussed. An explanation of the phenomena of nystagmus and the difference between quick and slow components is given. The author believes there is an incomplete reflex, the impulse not being of sufficient strength to cause stimulation of the nuclear cells, but strong enough to have a negative phase. On recovery the opposing stimulus has sudden full action and therefore a quick jerk occurs.

THOMAS D. ALLIE, M.D.

Heintz, G.: Rodent Ulcer (Usher Ulcus rodens). *Zschr. f. Augenheilk.*, 1931, LXXII, 589.

Rodent ulcer was first recognized as a distinct entity among the large number of corneal suppurations in 1867 by Mooren. Only about seventy cases of this condition have been reported in the literature, and among these there were only fifteen in which a histological examination was made. It is therefore evident that the lesion is quite rare and that many experienced clinicians have never seen a case.

The disease begins with grayish-white infiltrations of the cornea in the vicinity of the limbus. These give rise to superficial kidney-shaped ulcers which gradually extend in groups toward the center of the cornea and become undermined. Starting from the limbus, improvement occurs, but it never reaches the part pushed forward toward the center. The iris and the ciliary body are involved only very slightly if at all. There is no tendency toward perforation. In this fact and in the refractory behavior of the lesion toward every form of treatment lies the essential difference of the condition from other infectious suppurations. After healing of the ulcer the cornea remains thinned to one seventh of its normal thickness.

Five cases from the eye clinic in Kiel are discussed in detail and the histological findings in three are reviewed. At a distance of 3 or 4 cm from the limbus the cornea thinned out in step-like formations (half its normal thickness). Its upper lamella appeared to be torn off. Bowman's capsule disappeared suddenly. Over the step-like parts the epithelium proliferated in irregular layers and ended with a club-like raised cone. Descemet's membrane was intact. The round-cell infiltration extended for several millimeters into the deepest layers of the cornea and undermined it. At the same time there was abundant vascular development.

These phenomena are analyzed in order to determine whether the lesions were rodent ulcers or other ulcerations.

The author next discusses the etiology of rodent ulcer. There is a considerable difference of opinion regarding it. The attempt has been made to explain the condition even by constitutional anomalies such as articular rheumatism, gout, and blood diseases, but this theory has now been abandoned. The theory that the condition occurs most frequently in advanced age and is more common in males than in females has also been abandoned. The two remaining possibilities are (1) that the disease is traceable

to a local trophoblastosis, namely involvement of the corneal nerves, and (2) that it is an infectious disease of the cornea caused by an organism which reaches the eye directly or sends its toxins to the eye by way of the blood stream.

Much consideration has been given to the sensibility of the cornea. The sensibility of the cornea is quite often diminished. However, this disturbance of sensibility is not general, and in individual cases Sugenma has found the sensibility increased. The view of Junius that the cause of the nerve involvement is in the cranial part of the trigeminal nerve is not tenable. The changes that we find in diseases of the region of the nucleus of the trigeminal nerve we recognize as neuropathic keratitis. Neuralgic headache has no relation to the ulcer. Still less than the conditions of sensibility have the observations on tension found support. The tension is normal just as often as it is decreased. The relationships which Junius finds between rodent ulcer and neuropathically produced diseases of the cornea are certainly not recognized generally. Tumescence and vesicle formation are found occasionally in peripheral nerve lesions, but are not typical of them as they occur also in streptococcal infections. The peculiar homogeneous masses described by Hillemann, which the author also discovered, are probably thrombi and can contribute nothing to the explanation of the condition.

While the non-specific character of the lesion prevents conclusions as to its etiology from the histological picture, nevertheless certain details are of significance. It has been shown, for instance, that the vascular development is not limited to the pathologically thinned-out cornea, but penetrates into the depth of the cornea. Salus also believes that this new formation of blood vessels is not secondary. In reporting his first case the author emphasized the fact that the infiltration did not enter the superficial parts of the cornea, but penetrated into the depths without inolving Descemet's membrane. As a result the cornea was divided into two layers, the upper one of which included more than two thirds of it. The advance of the ulcer apparently does not occur along the course of the nerve but follows the lymph stream of the cornea, being produced by a toxin. Repeated attempts to find a specific evitant for the ulcer in the pus have been unsuccessful.

Gifford has called attention to the neighboring conjunctiva because in a severe case he was able to bring the gradual advance to a standstill only after he energetically destroyed the neighboring undermined conjunctiva with the thermocautery. Later, doubt was expressed as to whether this was a true case of rodent ulcer. However the author's third case shows that the ulcerative process need not necessarily confine itself to the cornea but, undermining the conjunctiva, may creep over to the sclera. If an infection is considered to be the cause, it is necessary to assume that the excitants or their toxins reach the eye by way of the blood stream or that there is direct bacterial infection. Associated

involvement of the episclera is rare, it may initiate the disease, but occurs also secondarily in the fully developed ulcer.

The assumption of a specific bacterial infection appeared at first very logical, but the more observations were made the more frequently the findings showed deviations from the picture of rodent ulcer that was considered typical. The author therefore believes that rodent ulcer is not due to a specific bacterial infection but may be produced by any pathological excitant. He cites a case reported before the Japanese Congress held in 1930 which clinically showed the picture of rodent ulcer, but was proved to be tuberculous by the presence of Langhans giant cells.

The peculiar course of the condition depends upon certain factors. In persons with metabolic diseases the reaction to the bacterial stimulus may have an entirely different course than in normal persons. Perhaps local changes in the cornea are also necessary, such, for example, as those occurring in trachoma. The author found a general infection in three of his patients, but is unable to say anything definite as to its nature.

In the light of the facts reviewed it is not surprising that we know of no specific remedy for the lesion. This therapeutic inactivity the author does not desire to share. He does not repudiate cauterization and curetting with the spoon. The Kuhnt covering after curettage or cauterization is of doubtful value as the ulcer may progress under it. Salus observed arrest of the ulcer by a recurrent trachoma. A patient whose case was reported by Epalza contracted a diplococcus infection which caused a breaking down and perforation, but the condition was arrested by treatment with zinc. Occasionally a scleroderma may cause improvement. In the presence of a general disease this must first be eliminated. Very often, injections of milk have a good effect. Enucleation of the diseased eyeball should never be done too early as frequently improvement sets in after months. In conclusion the author proposes the use of cupping under certain circumstances.

CARL AUGSTEIN (O)

EAR

Turner, A. L., and Fraser, J. S. Labyrinthitis, A Complication of Middle Ear Suppuration. A Clinical and Pathological Study. *J Laryngol & Otol*, 1932, XLII, 657.

The authors' conclusions are based on 14,479 cases of middle ear suppuration treated during a period of twenty-five years. A mastoid operation was performed in 20 per cent of these cases and labyrinthine complications were diagnosed in 1.5 per cent. One-fourth of the patients with labyrinthine complications had intracranial complications at the time of their admission to the hospital. The authors review the various forms of labyrinthitis and discuss the diagnosis and treatment.

GEORGE R. McAGLIFE, M.D.

MOUTH

Rieder, W. The Prognosis of Carcinoma of the Tongue, with Special Regard to the Clinical and Histological Grade of Malignancy (Prognose des Zungencarcinoms, unter besonderer Berücksichtigung des klinischen und histologischen Malignitätsgrades). *Beitr z klin Chir*, 1932, CLV, 611.

This is a report on ninety-three cases of carcinoma of the tongue. In the determination of the end-results the cases treated in the last three years (1929 to 1931) were excluded and only the eighty-two cases treated in the period from 1908 to 1928 were used. The statistics are given in detail.

According to the author's experience, the clinical prognosis of carcinoma of the tongue is dependent upon the location of the tumor, the type of the carcinomatous tissue, the duration and extent of the lesion, and the age of the patient. In contrast to the deeply infiltrating carcinomata, the superficially growing papillary tumors of the anterior two-thirds of the tongue are relatively benign as long as there are no metastases. The danger of metastasis formation increases with increasing ulceration and mixed infection. Superficial growths of the anterior half of the tongue have a relatively good prognosis. However, when such growths infiltrate the neighboring tissues, as is often the case, the prognosis becomes considerably less favorable, as in cases of carcinoma of the tongue which infiltrates into the depths from the beginning. Particularly malignant are carcinomata of the root and base of the tongue. The earlier a carcinoma of the tongue is treated, the better the prognosis. An early diagnosis of carcinoma in the pharyngeal portion of the tongue is usually possible only with the aid of the laryngeal mirror. Of the eighty-two patients whose cases are reviewed, twenty-one (25.6 per cent) were definitely inoperable. If an attempt is made to determine the prognosis of a carcinoma of the tongue clinically on the basis of the criteria mentioned (location, direction of growth, character, extent, and duration of the lesion) the two grades of malignancy shown in the following table will be recognized.

Location	Grade 1	Grade 2
	Anterior third of the tongue	Base of the tongue
Direction of growth	Papillary tumors	Infiltrating tumors 1 Ulcerous disintegration 2 Metastases, penetration of lymph glands 3 Disintegration with mixed infection.
Age of tumor	Early operation	Late operation (infiltrating growth) Metastases inoperable.

Ulcers which are still superficial are of the first grade of malignancy. When the lesion penetrates deeply its malignancy is of Grade 2. There are, of course, transitions between the two grades which may lead to error in classification. The author discusses the possibility of error in his material.

In all of the nine patients who are still free from recurrence from four to twelve and a quarter years after the treatment the tumor was clinically of the first grade of malignancy. In other words, of the patients with malignancy of Grade 1, 50 per cent are still free from recurrence after from four to twelve years. In the cases with malignancy of Grade 2 there was no lasting cure.

According to the author's detailed studies, the determination of the prognosis of malignant tumors on the basis of their histological structure and the tissue reaction (as suggested by Broders) is impossible. The method of determining the maturity and thereby the grade of malignancy of a tumor from the histological structure depends upon too many subjective preconceptions. Therefore the determination of the degree of differentiation cannot be done with certainty. This is evident from the fact that the basal-celled carcinomata, which are only slightly differentiated tumors, are relatively much more benign than the very markedly differentiated squamous-celled epithelial carcinomata.

The author calculated exactly the average length of survival of all of the patients who were operated upon. The operative mortality was 25 per cent. Nine of the patients are still alive—one after twelve and a quarter years, one after ten years, one after eight years, two after from six to six and three-quarters years, and four after four years. If the patients who have remained free from recurrence longer than four years are regarded as cured, the incidence of cure was 28.7 per cent. However if only those who have remained free from recurrence for six years are considered cured, the incidence of cure in the total number of cases was 10.4 per cent. If the twenty-six cases with glandular metastases at the time of the patient's admission to the hospital are excluded, 40 per cent of the patients have remained free from symptoms for from four to twelve years.

The most suitable operative method seems to be the use of the high-frequency current. Radical cleaning out of the submental, submandibular, and deep cervical lymph glands as advised by Kurrer is necessary for safety in the majority of the cases. In all cases operated upon, systematic re-examination is essential. According to the author's experience, treatment with the roentgen rays alone is of no value in carcinoma of the tongue. The combination of operative treatment with postoperative radium irradiation promises the best results if there is complete cooperation between the surgeon and roentgenologist. In cases of inoperable carcinoma of the base of the tongue Rieder extirpates the movable cervical glands, exposes the base of the tongue from the angle of the jaw and treats the whole tumor area by electrocoagulation. Rieder (2)

Ries, M.: *Anatomy of the Floor of the Mouth, with Some Surgical Applications* (Anatomie du plan de la bouche avec quelques applications chirurgicales). *La Fac. de med., Univ. de Montevideo*, 1912, vol. 411.

Ries says that the anatomy of the region of the floor of the mouth has received little attention in the anatomical textbooks although it is of special importance in the study of the simple and gynecous phlegmons occurring in this region which are of great clinical interest.

This report deals with the embryology of the solid portions, the planes of cleavage, the salivary glands, the lymph glands, the blood vessels, and innervation of the floor of the mouth and the musculature of the tongue. The discussion includes numerous references to the literature and illustrations. There is a clinical supplement dealing with some affections of the floor of the mouth and the routes of surgical approach to them. *Esra M. Sauerberg*

PHARYNX

Barnum, C. F.: *The Diagnosis and Treatment of Malignant Tonsil Conditions*. *Surg. Gynec. & Obst.* 1932, 1: 633.

As one of the factors in the incidence of cure of malignant disease of the tonsils is the extent of the trouble, every effort must be made to treat the condition early. The prognosis and the treatment depend on the type of the malignancy. If irradiation is employed, it should be carried to a degree far beyond that necessary to cause a primary necrosis or disappearance of the growth. Cancer of the tonsil, especially cancer of a high grade of malignancy, may sometimes be cured even when there is extensive gland involvement. Surgeons should regard irradiation as a valuable addition to their armamentarium. *James C. Brantwell, M.D.*

NECK

Dalcourt Bernard, E.: *New Researches Concerning the Action of Iodine on the Basal Metabolism* (Nouvelles recherches concernant l'action de l'iode sur le métabolisme de base). *Rev. belge d'ac. méd.*, 1932, 1: 283.

In normal persons, iodine has an irregular effect on the basal metabolism. In most instances it causes an increase, but in a few it causes a decrease. Its effect seems to be determined by the original height of the metabolic rate. In Basedow's disease, iodine in either the organic or the inorganic form was found to lower the basal metabolic rate considerably. Large doses were more effective than small doses. After the rate had been brought to normal by thyroidectomy iodine was found to increase it. The action of iodine could not be duplicated by the administration of similar substances such as bromides and fluorides. Therefore its effect is not due to ordinary oxidation, but is of a specific character. The mechanism of iodine action requires further study. *Leo M. Zimmerman, M.D.*

Rankin, F W, and Graham, A S Tuberculosis of the Thyroid Gland *Ann Surg*, 1932, xcvi, 625

Tuberculosis of the thyroid gland is discussed historically and statistically. Although reports of involvement of the thyroid gland demonstrated at autopsy following death from general miliary tuberculosis are of academic value, this study has been confined to clinical cases. The incidence of clinical tuberculosis of the thyroid gland has been shown to be extremely low. Of 20,758 thyroid glands removed surgically at the Mayo Clinic in a period of eleven years and examined microscopically, tuberculosis was found in only 21, approximately 0.1 per cent.

One hundred and four cases of surgically treated tuberculosis of the thyroid gland reported in the literature and 21 cases from the Mayo Clinic are tabulated separately. The combined data reveal a marked predominance of women patients in the fourth and fifth decades of life. Although active tuberculosis was evident in only 6 of 125 cases and was suspected in 5 others, it is believed that in probably all cases the thyroid condition is secondary to a disease process elsewhere in the body.

Diagnosis prior to microscopic study of tissue removed at operation is extremely rare. Only 3 such diagnoses are recorded. From a detailed study of the data on 21 cases it was impossible for the authors to determine criteria by which a clinical diagnosis could be made. The principal syndrome exhibited was that of hyperthyroidism (which was noted in 15 cases) with an increased basal metabolic rate of 19 per cent or higher. The question as to whether hypertrophy renders the gland more susceptible to invasion by the bacillus of tuberculosis or the infection stimulates the parenchyma to abnormal activity and is thus indirectly responsible for the hyperthyroidism could not be answered conclusively.

Evidence of thyroid deficiency was noted after thyroidectomy in only 3 of 115 cases. By far the most common observation was diffuse miliary tuberculosis with typical epithelioid tubercles and giant cells. Caseation was found in about a fifth of the cases studied. Abscess and evidences of marked sclerosis were noted less frequently. Tuberculosis occurred in an adenomatous goiter in 51 cases, in a hypertrophic parenchymatous gland in 31 cases, and in a colloid gland in 6 cases. Convalescence after thyroidectomy in these cases was no different from convalescence in cases of uncomplicated adenomatous or exophthalmic goiter. In both groups the same excellent prognosis can be given.

Winkenwerder, W L, and McEachern, D The Use of Iodine in the Pre-Operative Treatment of Hyperthyroidism, with Remarks on Iodine Remissions as Observed in Baltimore, Maryland *Bull Johns Hopkins Hosp*, Balt., 1932, l, 282

An analysis of 157 cases of hyperthyroidism in Baltimore, Maryland, with regard to the effect of iodine therapy yielded findings which agreed in

general with those reported from Boston, Chicago, and Ann Arbor, Michigan. Definite remissions occurred in 144 of the cases. The maximal improvement was noted between the eighth and thirty-second day, and the average period before the maximal improvement was reached was thirteen and a half days. The greatest reductions in the metabolic rate occurred in the patients with the highest initial basal rates. An average decrease of 50 per cent in the metabolic rate was obtained, regardless of the level of the rate before the iodine therapy was begun.

The remission following the administration of iodine was found to be transitory. A recurrence usually developed whether the iodine was continued or not. Therefore the authors advise the administration of iodine only as a pre-operative measure. In severe cases in which it may be doubtful whether the patient will be ready for surgery when the maximal effect of the iodine is reached, it is wise to delay the institution of iodine therapy for several weeks after the beginning of bed rest, general medical care, and symptomatic therapy.

In a small percentage of the cases reviewed irregular iodine effects were noted. In some cases the improvement was slow and continued over a much longer period than the usual two weeks. In 4 cases the manifestations of hyperthyroidism were intensified by the iodine therapy. In 9 cases no appreciable effect from the iodine medication was noted. While some of these atypical reactions may be accounted for by previous iodine therapy, not all of them could be so explained.

No material difference in the effect of iodine was noted in diffuse goiters as compared with nodular goiters. It was frequently impossible to determine whether a case was of the exophthalmic goiter type or the nodular type. The degree of iodine effect was independent of the preparation or solution of iodine used. Iodides of sodium or potassium are as effective as, and less disagreeable than, Lugol's solution. The dosage must be adequate.

LEO M. ZIMMERMAN, M.D.

Seed, L The Determination of Operability in Exophthalmic Goiter *West J Surg, Obst & Gynec*, 1932, xl, 613

Reduction of the operative mortality of thyroidectomy for toxic goiter to the minimum requires proper selection of the time for the operation. While the criteria of operability cannot be stated definitely, certain features of the patient's condition must be carefully considered in determining his fitness for operation. The weight curve is most important. Stationary or increasing weight indicates that the condition is improving and offers a good prognosis. Muscular strength is also a valuable index. A patient who is able to step up on the chair without assistance is able to withstand operation. The basal metabolic rate *per se* is of little aid in the determination of operability. However, values above +75 indicate an unfavorable prognosis.

When operation is considered there should be no edema of the legs or ascites and the patient should be able to be out of bed for several hours each day. Operation should not be done when the patient is approaching a crisis or before at least six weeks after a crisis. Extremes of youth and age, long duration of the disease, persistent albuminuria, and hypertension indicate a graver prognosis.

Leo M. Zlotnikoff M.D.

Spencer F. R.: The Diagnosis and Treatment of Laryngeal Tuberculosis. *Illness* M. J. 1933 Vol. 3 6

One of the earliest signs of laryngeal tuberculosis is infiltration of the interarytenoid sulcus. This often resembles pachydermia of the larynx and, especially if there is a history of chronic hoarseness for several weeks or months, may not attract very much attention. In the cases of patients who are coughing a good deal the infiltration of the larynx may be preceded by a marked laryngeal hyperemia. This pretuberculous appearance of chronic laryngitis in patients with a cough should always arouse the suspicion of pulmonary tuberculosis.

In the cases of patients who have had pulmonary tuberculosis for some time and show a secondary anemia such as is common in this condition, the larynx, pharynx, and soft palate may have a mottled appearance due to small pink areas alternating with pale areas.

Occasionally a small papilloma may be found in the larynx. When this is caused by tubercle bacilli it is a tuberculoma. Tuberculous lesions occur more frequently on the posterior half of the larynx, whereas carcinoma occurs more frequently on the anterior half.

Ulcerations in the larynx represent a later stage of the disease. They may be acute or active, chronic or sluggish, and superficial or deep at first. They are likely to be superficial and rather sluggish. They frequently have irregular edges and may not be very easily recognized. If the patient complains of pain it is often well to spray the larynx with a 3 per cent aqueous solution of cocaine, wait for ten or fifteen minutes for this to take effect, then spray with a mild alkaline solution to wash the mucus from the ulcers as much as possible, and then spray with a 2 per cent aqueous solution of fluorescein. The fluorescein will stain even superficial tuberculous ulcers a light green so that they can be more easily recognized.

Laryngeal tuberculosis develops relatively late in the course of pulmonary tuberculosis. Frequently the lesions are rather advanced before they cause dysphagia, odynophagia, hoarseness, or aphonia. In all cases of pulmonary tuberculosis the larynx should be examined at least once a month.

In laryngeal tuberculosis as well as pulmonary tuberculosis, bed rest and climatic treatment are of importance. The larynx is placed at rest most effectively by absolute silence. Sir St. Clair Thomson attributed his recovery from laryngeal tuber-

culosis to the fact that he did not even whisper during the first year and did not talk out loud during the second year.

Recently sunlight treatment of the larynx has assumed considerable importance. Glass absorbs the actinic, chemical, or ultraviolet rays and is not suitable for reflecting the sun's rays into the larynx. By means of the Verbe solar laryngoscope, which has mirrors made of an alloy of aluminum and magnesium, more than 90 per cent of the actinic rays may be reflected into the larynx. The larynx should be exposed to these rays for half a minute daily at first and the time then lengthened a half minute each week until radiation for ten minutes daily can be tolerated without discomfort.

Lactic acid, formalin, and trichloroacetic acid are of very little value in laryngeal tuberculosis.

Probably no other single method of treating laryngeal tuberculosis has yielded such uniformly good results as cauterization. The cautery may be used by the direct or indirect method. A sharp cautery at white heat will produce enough fibrin change to destroy a tubercle or ulcer. To be of most value it should be used early, before there are too many multiple lesions in the larynx. Cauterization is contra-indicated by high fever, night sweats, loss of weight, and exhaustion from pulmonary disease. It should be employed only when the chest expert reports that the patient can tolerate it. It is rarely followed by hemorrhage or infection, and it requires very little after-care.

When the gross pathological changes are limited to the epiglottis, amputation of the epiglottis is an excellent means of arresting the disease, but here the condition has extended into the base of the tongue and the pharynx, amputation of the epiglottis only aggravates it and hastens death. The author describes the preparation necessary for removal of the epiglottis, the technique of the operation, and the after-care.

In advanced laryngeal tuberculosis, tracheostomy is justifiable. For cases in which extensive involvement prevents swallowing the author recommends gastrostomy. Alcohol injection into the larynx is described in detail. JOHN J. MASON M.D.

Stewart Harrison, R.: Malignant Disease of the Larynx and Pharynx. *J. Laryngol. & Otol.* 1934 Vol. 5 5

In carcinoma of the larynx, surgery remains the treatment of choice when it can be accomplished without causing too gross mutilation. In many cases protracted fractional X-ray therapy is preferable. The limits of radical surgery and irradiation therapy in the laryngeal region cannot be defined with precision. Important factors in the choice of treatment are the histological character and radio-resistance of the neoplasm.

During the period from 1919 to 1928, the results of the use of radium in diseases of the larynx and pharynx were not encouraging. Recently radium treatment of malignant disease of the larynx has

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Heuer, G J Tumors of the Sternum *Ann Surg*, 1932, xcvi, 830

Chondromyxomata of the costal cartilages are rare. The author reports a case in which a large mediastinal chondromyxoma arising from the sternum was removed. The patient was relieved for a year, but recurrence developed from a metastasis. The case history is supplemented by photographs of the tumor and roentgenograms.

The author briefly summarizes the histories of cases of tumor of the sternum which have been reported in the literature. Twelve per cent of the tumors were primary cartilaginous neoplasms.

J FRANK DOUGET, M.D.

Milone, S Cystic Fibrosis of the Breast (La fibrosi cistica della mammella) *Arch ital di chir*, 1932, xxxi, 401

Milone reviews the literature on the so-called chronic cystic mastitis, which he believes should be called "cystic fibrosis," and reports a clinical and histological study of 208 cases. The cases studied were from a group of 726 cases of breast tumor. They constituted 26.8 per cent of the tumors in females and 77 per cent of those in males.

The etiology of the condition is not well established. In males, cystic fibrosis is the most common breast tumor. It seems to be related to sexual life and in some cases is associated with cirrhosis of the liver. In females, it occurs at all periods of life after puberty. The average age of the females whose cases are reviewed was forty-two years. The condition seems to have a definite relationship to the menopause and a possible relationship to senile involutional changes. In the cases reviewed it was more common in unmarried than married women.

With regard to the pathogenesis there are several theories. The theory that the condition is of an inflammatory character has been rejected by many as signs of active infection with granulation tissue are never seen. The author rejects also the theory of Schimmelbusch that the disorder is a true neoplasm resulting from epithelial proliferation as the primary change, secondary connective tissue proliferation, and cyst formation due to a secretory activity of the new epithelium. According to a third theory, it is due to a congenital malformation which permits the ducts to yield to the normal secretory pressure. This conception is based largely on the presence in the cysts of a peculiar pale epithelium and eosinophiles like those of the sweat glands of the axilla. Those accepting the theory believe that these structures represent aberrant sweat glands, but others have observed the development of similar cells from

the subepithelial layer of the normal epithelium and have found them in the normal lactating breast and many other organs. According to a theory which has been widely accepted, the condition represents a primary connective tissue hyperplasia with secondary occlusion of the ducts, cyst formation, and secondary irritation of the epithelium resulting in proliferation and lymphocytic infiltration. Some believe that analogous changes accompany senile changes. In the author's opinion, the condition is due to a combination of involutional changes with hyperplasia of connective tissue in early cases and with hyperplasia of epithelial tissue in late cases acting under the influence of the internal secretions of the ovary.

Pathologically the process shows 3 stages: (1) simple fibrosis, (2) cyst formation, and (3) papillary hyperplasia of the epithelium. Its relation to the development of malignant and benign tumors is most important. The author believes that malignant degeneration occurred in from 25 to 33 per cent of the tumors he studied, and that this change was most frequent in the papillomatous varieties. In about 10 per cent, a benign tumor of the fibroadenoma type developed. Sarcomatous degeneration, which Milone believes takes place through the development of a fibroadenoma, was not observed.

Clinically, the condition is an insidious disorder which usually develops without any apparent cause. A definite relationship to trauma was suggested in only about 8 per cent of the cases studied. Pain was present in from 30 to 50 per cent. In about 15 per cent there was a serosanguineous discharge from the nipple, but this was not necessarily a sign of malignant degeneration. In about 20 per cent, the condition was bilateral, and in the majority the tumefaction appeared in the upper outer quadrant of the breast. As a rule the nodules were small, multiple, insensitive, scattered, or confluent. Only rarely were they associated with retraction of the nipple or adhesion of the skin or deeper structures. Enlargement of the axillary glands was absent as a rule.

The differential diagnosis from carcinoma is most important and often impossible. Cysts may be revealed by transillumination, and exploratory puncture may disclose the nature of their contents. However, the best diagnostic aid is biopsy. The course of the condition is chronic with fluctuations.

In the majority of the cases surgical intervention is advisable. In the cases of young women with localized lesions it may consist in simple excision of the tumor. In fully developed cases amputation should be done. In cases of tumor of the papillomatous variety or signs of malignancy, radical resection of the breast and glands is indicated.

A LOUIS ROST, M.D.

Kilgore, A. R.: Fractaneous Lesions of the Breast. *West. J. Surg. Obst. & Gynec.*, 1935, 21, 521.

Kilgore believes that there are very few benign lesions of the breast which become malignant. He states that the breast abnormalities showing a greater or less tendency to undergo malignant degeneration are of three types:

1. The productive abnormal involution in which a papilloma or cystadenoma is found. The tumor can be detected by the clinician.

2. Paget's disease of the nipple.

3. Persistent acute induration of lactation abscesses.

Laura P. Gaudin, M.D.

Fraenkel, L.: Plastic Operations on the Breast (Ueber Mastoplastik). *Zentralbl. f. Gynecol.*, 1935, p. 1706.

The author describes a successful plastic operation on the breast in which the methods of Loesch and Biesenberger were combined. In both of these methods the breast with the nipple and areola is dissected free from the skin and sutured into a newly formed opening in the skin at a higher level. In the case reported an incision was made around the nipple and the skin dissected away from it. A curved incision in the skin was then made 1 cm. above the site of attachment of the lower pole of the breast, the skin dissected back, and the fatty coat of the gland removed. Lateral resection of the upper outer quadrant was then done by a laterally concave incision and resection of the lower outer quadrant by a medially concave incision. Next, the portion of the breast with the nipple was rotated outward and upward through an angle of 160 degrees and attached to the undisturbed upper portion with a few catgut sutures. The superficial skin was removed. At the proper point for the new position of the nipple a circular opening the size of a quarter was cut in the skin and the nipple was sutured at this point. The curved incision in the skin was then closed.

This operation is not difficult or bloody but is time-consuming as it requires great care and constant comparison of the two sides. *Schönemann (G)*

TRACHEA, LUNGS, AND PLEURA

Klein, B.: The Importance and Treatment of Injuries of the Pleura and Lung (Bedeutung und Behandlung der Verletzungen des Brustfelles und der Lunge). *Oswest. J.*, 1935, 21, 521.

In the year 1915 the war surgeons Garré, Sauerbruch, and Borchard took up a position in favor of primary operative closure of open thoracic injuries, with care for the pulmonary injury and without drainage of the thoracic cavity. Further experiences in the war taught the nature of the lung and ligation of the pulmonary vessels. In this manner 70 per cent of patients with lung injuries were cured, whereas in the first and second years of the war the mortality from such injuries was 90 per cent. The dangers of opening the thorax may be greatly diminished by the use of the differential pressure apparatus. The great

importance of injuries to the thoracic wall and lung is due to the injury to the vessels and the entrance of air and foreign bodies into the thoracic space. Hemorrhages from the internal mammary and the intercostal arteries seldom discharge outward, the blood flows into the thoracic cavity and in the more severe cases demands operative intervention. It is important to determine whether the blood comes from vessels of the thoracic wall or from the lung. When the site of the injury corresponds to the course of the vessels mentioned, an injury of those vessels is probable. Foamy blood at the site of injury suggests injury of the lung. The spitting of blood is an infallible sign of lung injury. In cases of severe injury hemorrhage appears at once and is copious. This is true especially in injuries of the upper bronchus, as in such injuries the traumatized vessel empties its contents directly into the bronchus.

The absence of hemoptysis does not absolutely rule out lung injury as hemoptysis may be absent when there is marked contraction of the lung and when the hemorrhage occurs into the pleural space. In such cases a rapid increase in the extravasate points toward the correct diagnosis. On Weber's service in the period from 1916 to 1917 211 thoracic injuries were treated. In 2 cases ligation of the intercostal or the mammary artery was necessary. If none of the larger pulmonary vessels in the lung is injured, the patient generally does not lose much blood as air enters the thoracic space through the bronchus which was injured at the same time and the resulting pneumothorax compresses the lobes of the lung. Extravasated blood acts in a similar manner. In the cases reviewed the mortality from injury to the large vessels was 5 per cent. Large extravasations of blood, which damage heart function, are punctured. The same procedure is carried out when, after a week, a blood extravasate shows no tendency to become resorbed. Blood extravasates were present in 53 (25 per cent) of the cases reviewed. Small hematomata heal without operative intervention. Separation of the crests is dangerous. The empyema separated in 3 (19 per cent) of the 53 cases. Secondary hemorrhage is also dangerous. It is caused early by sudden attacks of coughing and later by inflammation, the breaking down of lung tissue, the rupture of a small aneurism, or the erosion of a vessel wall by bullets or gunshot splinters. The symptoms and treatment of secondary hemorrhage are the same as those of simple puncture and gunshot injuries of the lung and lung rupture. In addition to the usual methods and medicaments, morphine is a sovereign remedy.

Foreign bodies may heal in. If they do not cause symptoms their removal is not important. If they cause fever or bronchitis or if they lie under the pleura and cause circumscribed pleurisy their removal is absolutely necessary.

When a communication is formed between the lung and the thoracic space by an injury to a large bronchus, the condition is spoken of as open pneumothorax with an internal opening. When

the communication is constant, the condition is called a "tension pneumothorax." If it is impossible to cure the latter by aspiration of the air and drainage of the thoracic wall, thoracotomy and closure of the lung wound are to be considered. Because of its greater frequency, the open pneumothorax is the more important. Every patient with this injury has the appearance of being severely injured. Hemorrhage and shock are the dangers. When these two factors no longer threaten life, there still remains the danger of infection which may not appear until after weeks or months. The fate of the patient is different if the open pneumothorax is closed by operation after subsidence of the symptoms of shock. The first and most important aim of therapy is to combat the loss of blood and the shock. The administration of large doses of camphor and the subcutaneous injection of an ampoule of a 2 per cent solution of morphine are the first requisites. This is followed by digitalis and caffeine. Just before the operation 1 liter of physiological salt solution is given by subcutaneous infusion. The lower extremities are elevated and bandaged. Positive pressure oxygen inhalation also has a favorable effect on the heart. Operation is deferred until the symptoms of shock have disappeared. If only the thoracic wall is injured, local anesthesia is used. If the lung is injured, light ether general anesthesia is induced. For operations on the thorax the surgeon should always use rubber gloves or linen gloves and swabs which have been kept in physiological salt solution. Dry linen gloves and swabs injure the pleural epithelium. By reflex action, rough rubbing and swabbing may cause stoppage of the action of the heart and respiration.

The method of operation for open pneumothorax depends upon the anatomical relations of the injury. In the simplest cases—those without injury to the lung—the thoracic wall is closed in layers with button sutures after the margins of the wound have been freshened. If injury to the lung, diaphragm, or heart is suspected, the defect is enlarged by rib resection or intercostal incision to permit orientation. The openings by which the projectile entered and left the lung are carefully searched for a lodged bullet, splinters, bits of clothing, and rib fragments. In order to make the site of injury more accessible, the positive pressure is raised to 8 cm. of water. Fresh, foamy blood then oozes from the site of the injury. When the injured spot is discovered, the pressure is reduced to 3 cm.

The lung lobe is drawn out and a soft clamp is applied under the site of the injury. The lung fragments are removed, the vessels and bronchi are ligated, and when the bleeding is controlled, the wound is closed with silk button sutures or a Glover's suture.

If the lung is badly shattered (lodged grenade splinters, shot that have hit the ground and rebounded), it is not always possible to control the bleeding. In this case the artery in the base of the lung must be ligated (Jehn, Sauerbruch, Kuettnner).

A similar procedure is recommended by Sauerbruch for vessel tears which cannot be inspected. The toilet of the pleural cavity follows the care of the lung wound and vessels. In cases of clean injury, sterile suction of the blood and the intravenous infusion of a 2 per cent sodium citrate solution may be considered (Thies). Before the opening in the thorax is cared for, the lung should be inflated. The wound in the thoracic wall should be closed with a pericostal or percostal suture. The tying should be done during expiration. This is particularly important as regards the last suture.

Even when an entire pulmonary lobe is injured, the thorax should be closed if it has been possible to suture the lung and if the anatomical relations of the thorax permit closure. When the defect in the thoracic wall is large, the lung is fastened with button sutures to the border of the musculature in the thoracic window. For injuries below the seventh rib, the diaphragm can be used to help close the pleural space (Rehn).

When the defect in the thoracic wall cannot be closed, the pulmonary injury should be cared for, the bronchi tied off, the lung inflated, and the remaining portion of the thoracic cavity then closed air tight with broad strips of vioform gauze laid one over the other. For further protection an ointment dressing is applied over this dressing. After the tamponade the differential pressure is discontinued. The vioform gauze tampon leads to adhesion between the lung and the thoracic wall in from eight to ten days.

If the injury to the lung tissue is so severe that suture of the lung cannot be done, the entire pleural cavity should be tamponed.

Fresh prolapse of the lung should be replaced. In old, inflamed prolapses gangrene is to be feared. Therefore, the prolapse should be transfixed in the base and ligated.

After operation the fate of the injured person depends upon many circumstances. The dangers that threaten are early developing pneumonia, lung abscess, gangrene, and, chiefly, infection. From the standpoint of the clinical picture and their importance, a distinction must be made between early and late infection. When the pleura is intact the consequences of infection are often still more severe and the patients succumb usually within the first twenty-four hours with the symptoms and signs of severe sepsis. Late infections of the pleura run a less rapid course and are also more benign. The fever that develops in the first few days after the injury is due to the wound reaction and the resorption of the exudate. A rise in the temperature occurring on the seventh or eighth day with chills, indicates late infection.

The indications for operation and the choice of the time for the intervention depend upon the patient's general condition. If his life is in danger because of toxæmia, operation should not be delayed. Otherwise the time for the operation is determined by the character of the pus.

Empyema is treated in accordance with the usual rules and methods. Rices is not in favor of irrigation of the acute empyema cavity or similar procedures as they may cause reflex shock, infect a pulmonary lobe through a bronchial fistula, or lead to general infection along the course of an injured vein. Only old empyema cavities should be irrigated. The irrigation should be done cautiously with lukewarm physiological salt solution under low pressure and with a soft catheter.

Fistula formation can seldom be prevented in spite of care. When it occurs, thoracoplasty is indicated (Sauerbruch).

The later course of thoracic injuries shows many peculiarities even after the wound has healed completely. The shape of the thorax and its movements often undergo an important change. The organization of the blood extravasate and the formation of pleural indurations often cause a considerable change in the mechanical relations of the thoracic space. Bronchiectases may result from the presence of scar tissue and adhesions.

The danger of immediate and later sequelae of injuries of the thorax can be very greatly diminished by suitable operative intervention and an appropriate procedure. Not only the direct danger to life but also a large number of sequelae which jeopardize life and the ability to work can often be avoided.

ERNEST RICE (2)

Hayes, J. N.: The Dangers and Complications of Oleothorax. *J. Thorac. Surg.* 23: 4, 24.

While oleothorax is a valuable aid in pulmonary collapse therapy a very careful technique and close watching are necessary to prevent complications.

In order to avoid irritation of the pleura, the oil should be injected at body temperature. The first injection should always be a small one, about 5 c.cm. to test the reaction of the pleura especially when the pleura is dry. When the pleura is sensitive, olive oil may be used instead of paraffin. When febrile reactions increase the gas pressure they may be dangerous and the pressure should be reduced by aspiration. During injection the gas pressure should be under constant observation.

One of the dangers of the treatment is perforation of the lung. When this occurs, oil may flood the other lung and may cause death by suffocation. The instant the perforation is recognized the oil should be removed.

If the needle punctures a vessel or the oil is forced under pressure into newly formed capillaries, oil embolism may occur.

Among other possible complications of the treatment are phlegmon of the chest wall, parathorax, pleurocutaneous fistula, and exudative pleural reactions. The formation of a pleurocutaneous fistula is usually due to tuberculous infection of the needle track. To prevent such infection the interior of the needle should be cleaned before withdrawal, the pleura washed free of pus, or the oil injected high in the axilla with a small needle. In some cases the

oil may be coughed out and lie under the skin. This may be prevented by methods to stiffen cough and the use of a compression bandage.

A minor disadvantage of the method is difficulty in observing the progress of the compression of the lung.

MARCELO P. MIRRA, M.D.

McGordock, H. L., and Balfour, H.: The Mechanism of the Development of Tuberculous Pneumonia Following Thoracoplasty. *J. Thorac. Surg.* 1923, 11, 24.

Two fatal cases of acute tuberculous pneumonia following thoracoplasty for tuberculous cysts in the other side are discussed on the basis of the post mortem findings. The authors state that death occurring within the first few days after thoracoplasty are often erroneously attributed to edema of the lungs or bronchopneumonia of a non-tuberculous nature. They believe this error is due to the failure of clinicians and pathologists to recognize the fact that the inflammatory edema is an early manifestation of tuberculous pneumonia.

In both of the cases reported by the authors the lesion in the formerly normal lung was clearly demonstrated to be an extension from a tuberculous focus in the lung subjected to compression therapy. That it was not due to hematogenous dissemination of the infection was evident from the absence of tubercles in other organs of the body. As patients subjected to thoracoplasty are all potentially smoldered, compression therapy may act as an incubation mechanism by causing a sudden discharge of relatively large quantities of tubercle bacilli or their products into the alveoli of uninvolved lung tissue.

MARCELO P. MIRRA, M.D.

Vidal, M. J.: The Diagnosis of Bronchopneumocyst Suppurations (Diagnosis des suppurations broncho-pneumocystiques). *Arch. med.-chir. de l'Harv.* 1923, 21, 74, 3.

In the course of suppurations developing in the parenchyma of the lung two successive phases may be distinguished, the first a phase of closed pulmonary suppuration, and the second phase in which the pus is expelled. The clinical problem arises when the pus is coughed up. When this occurs there are two possibilities to be considered:

1. The course of the condition may be acute and accompanied by systemic signs and severe infection.

2. The course of the condition may be chronic and characterized by acute exacerbations.

In suppurations with an acute course the condition is of recent origin, with a sudden onset accompanied by chills, severe pain in the side and dyspnea. After an apparently ordinary pneumonopathy during which the diagnosis is uncertain for a few days, the occurrence of abundant expectoration, the character of the sputum which is sometimes foetid, and the prolonged evolution of the condition suggest the possibility of pulmonary suppuration. Under such circumstances the following three possibilities must be considered:

1 Diffuse pulmonary suppuration with a rapidly fatal termination. Caseous pneumonia is excluded by absence of tubercle bacilli in the sputum

2 Gangrene of the lung In this condition the sputum is abundant and has the odor of carrion, which is characteristic of gangrene The systemic signs are very severe—a high fever, diarrhoea, albuminuria, sweats, and anxious facies The signs of cavity appear and spread rapidly The condition is usually rapidly fatal, but occasionally it recedes and presents the syndrome of chronic abscess with gangrene

3 Acute abscess The most frequent type is the metapneumonic abscess Acute abscess is distinguished from diffuse pulmonary suppuration by the character and definite localization of the physical signs, which are distinctly those of a cavity, and the less serious character of the general phenomena X-ray examination discloses a characteristic shadow Bacteriological examination of the sputum often shows only one type of bacterium—a pneumococcus, streptococcus, or staphylococcus, or Friedlander's bacillus Acute abscess due to pyogenic bacteria usually runs a relatively favorable course and not infrequently becomes cured spontaneously Occasionally, however, it spreads rapidly and is associated with necrosis

Chronic suppuration of the lung may also be preceded by an acute pneumopathy A syndrome of cavity formation soon develops and the expectoration increases while the general signs gradually improve These changes represent the transition of an acute abscess into a chronic abscess Jacquelin and Duruy maintain that in cases of recent suppuration such a change may be foretold from the presence of numerous bacteria in the sputum since frequently in acute abscess only one type of organism is found A better sign is the onset of the condition Chronic suppuration rarely develops after a single acute pneumopathy occurring in a person in good health Usually its onset is insidious and progresses during repeated respiratory infections It is associated with the expectoration of copious purulent sputum which often settles in three layers and contains bacteria of numerous types—pyogenic bacteria, anaerobes, and spirochaetes The odor of the sputum is very often foul, but is unlike that of gangrene The cough varies with the amount of sputum Dyspnoea is moderate or absent The findings of physical examination are extremely variable In the most typical forms the syndrome of cavity formation is presented and coarse râles are heard The general signs vary according to the stage of the condition The general health is well maintained, but the prognosis is unfavorable

In the case of a patient who is coughing up pus and presents the symptoms and signs of an ulcerative pulmonary lesion the first condition to be considered in the diagnosis is pulmonary tuberculosis This must be ruled out chiefly by bacteriological examination of the sputum, as hæmoptysis occurs also in lung abscess In the determination of the site of

the lesion, roentgen examination is of most value An encysted purulent pleurisy (especially of the interlobar variety) with a bronchial communication, and mediastinal and subdiaphragmatic collections of pus must also be ruled out

The question then arises whether the suppuration is a lung abscess or bronchiectasis In bronchiectasis the beginning of the condition is difficult to determine As a rule the symptoms have been present for a long time and frequently it appears that they developed after a pneumopathy in infancy Abscess of the lung is usually of recent origin In bronchiectasis, the expectoration occurs chiefly in the morning, whereas in lung abscess it is more constant In bronchiectasis the general condition is better than in lung abscess The physical signs are of little diagnostic aid X-ray examination is indispensable In bronchiectasis, it shows a diffuse and more or less opaque shadow obscuring the pulmonary field unevenly and evidences of peribronchial sclerosis In abscess, it reveals a cavity with a horizontal fluid level surrounded by a dark zone of parenchymatous condensation Sometimes there are several similar images juxtaposed or superimposed In bronchiectasis, a roentgenogram made immediately after the intratracheal injection of lipiodol shows very characteristic shadows of dilations of various shapes which resemble a bunch of grapes hanging from the bronchial tree

The suppurating hydatid cyst is manifested before the stage of suppuration by signs which are sufficiently definite for the diagnosis, viz, the character of the initial expectoration and the findings of laboratory tests

Suppurating cancer of the lung may be diagnosed with certainty by bronchoscopy and biopsy

Pulmonary mycoses are recognized by examination of the sputum

By the great majority of surgeons exploratory puncture is regarded as a dangerous procedure which often fails in the cases in which diagnosis by other methods is difficult However, exploratory puncture followed by the injection of lipiodol often yields very valuable roentgen findings The injection of lipiodol, by rinsing the cannula, makes it possible to withdraw the cannula without causing contamination of the track

Bronchoscopy yields information regarding the condition of the bronchial mucosa and the situation and aspect of the draining bronchus, permits biopsy and the injection of lipiodol at the desired site, and reveals intrabronchial foreign bodies which are frequent causes of bronchopulmonary suppuration

After the presence of an abscess of the lung has been determined the sputum should be subjected to a bacteriological examination

The two chief varieties of bronchopulmonary suppuration are bronchiectasis and pulmonary abscess The effort must be made to distinguish between them, but one may follow the other or the two conditions may be associated

Guthrie, A.: Surgical Treatment of Bronchopulmonary Suppurations (Le traitement chirurgical des suppurations broncho-pulmonaires) 4 *ch. méd. chir. de l'Appar. respir.* 1933, VII, 31

Theoretically the treatment indicated for well circumscribed abscess of the lung is simple pneumotomy and drainage of the cavity for dilatation of the bronchi with cavities surrounded by rigid bronchial walls, collapse therapy and for more or less extensive gangrene of one lobe of the lung, pneumectomy. Practically however the therapeutic indications are influenced by the following factors:

1. The presence of the pleural serosa around the diseased lung. As a rule the pleura reacts to a suppurating focus with an effusion or the formation of adhesions. One or the other of these reactions may prevent the treatment which seems indicated for the pulmonary lesion. On the other hand, absence of pleural adhesions may be unfavorable for the ideal therapeutic method because of the associated risk of infection of the serosa.

2. The site of the suppurating focus in the lung.

3. The anatomical changes associated with the lesion.

Pulmonary abscess tends to become chronic. The sclerosis surrounding the infection extends to the peripheral bronchi and causes them to dilate. There is then no distinct difference between lung abscess and bronchial dilatation. Moreover the retention favors the development of anaerobes, the abscess becomes foul, and foci of necrosis appear and extend into its thickened wall and around it. There is then no distinct difference between abscess and gangrene.

Bronchial dilatation continues to spread, and the gaping bronchial lumina coalesce to form a large cavity containing stagnant pus which is a true abscess. Invaded by infection and sclerosis, the lung tissue is soon destroyed by gangrene.

The area of gangrene is surrounded by an area of pyoclaudrosis. The pus soon collects & forms an abscess. The abscess then spreads and causes dilatation of the bronchi at the level of the branching of the respiratory tree.

Therefore at one phase in their evolution, abscess, bronchial dilatation, and gangrene merge into each other. There is an irregular suppurating cavity surrounded by a rigid shell and plaques of pulmonary paracystoma undergoing necrosis.

The treatment should be directed toward evacuation of the suppurating focus and removal of the cause.

The therapeutic procedures may be divided into the direct and the indirect, according to whether the suppurating focus is attacked directly or through the surrounding tissues.

The direct operations are pneumotomy which opens the focus to the exterior through the chest wall bronchoscopy by which the pus is aspirated through the natural passages and pneumectomy by which the suppurating focus is removed through an opening made in the chest wall. The indirect opera-

tions are the various procedures for external compression of the focus to express or expel its contents through the natural processes, viz., artificial pneumothorax, phrenectomy apicotomy, and thoracoplasty.

These procedures may be classified also according to whether simple drainage or removal of the focus is done.

Of the drainage operations, aspiration of the pus by bronchoscopy is the simplest. This procedure does not belong to general surgery. Collapse therapy by the induction of artificial pneumothorax is also regarded as belonging to medical treatment. Truly surgical collapse therapy includes phrenectomy apicotomy, and extrapleural thoracoplasty.

Phrenectomy is done to paralyze half of the diaphragm so that it will rise in the chest cavity and exert pressure on the lung from below. It can be considered only if the focus has an extensive communication with the bronchi, its walls are relatively supple, and it is situated not far from the surface. Phrenectomy acts only on suppurations in the base of the lung. It is a simple operation which has sometimes resulted in cure, but may cause rupture of the pus into the pleura or the retention of pus in the abscess.

For apicotomy, the focus must be deep, ill limited, in wide communication with the bronchi, relatively superficial but not too near the surface, and preferably in the region of the apex of the lung. Its walls must be supple, and the pleura must be adherent. Apicotomy is not a severe operation. It is of advantage because the compression is produced at the site of election and can be relieved when the cavity has been obliterated. However it is associated with the danger of tearing of the pleura and the development of suppuration in the artificially produced pocket due to lymphangitic infection.

For extrapleural thoracoplasty the focus must be relatively superficial without being too near the pleura and must be well drained, and the infection must be chronic or at least quiescent. The operation has the disadvantage of causing permanent compression of the lung and permanent deformity of the chest and is associated with the danger of causing inoculation of the other lung. The mortality is 40 per cent, but the conditions in which it is performed are severe.

In a consideration of the value of collapse therapy in bronchopulmonary suppurations it must be recognized that this treatment does not act upon deep foci. It is associated with the danger of opening superficial foci into the pleura, it is ineffective on sclerous foci, exerting its action more upon the normal parenchyma which remains elastic than on the rigid and gaping focus, it requires a wide communication of the focus with the bronchi. It does not eliminate the danger of recurrence and, as it impairs the bacteria in the sclerotic tissue, it does not eliminate the cause of the suppuration.

For drainage through the chest wall by pneumotomy the abscess must be superficial so that the

knife will not have to pass through a thick layer of parenchyma to reach it. It must be a single, well-circumscribed abscess. The two leaves of the pleura must be adherent throughout the extent of the parietal incision. The site of the abscess and the zone where it is nearest the thoracic wall must be determined by several roentgenographic examinations made at different angles. The abscess must not be in the acute stage, but must be of fairly recent origin. The best time for the intervention is at the beginning of the chronic stage, about two months after the onset of the illness. The dangers of the procedure are severe hemorrhage at the time of the evacuation or later, inoculation of the pleura due to the tearing of adhesions, and severe phlegmonous or gangrenous infection of the chest wall. When pneumotomy alone results in cure it is followed by nearly complete restoration to normal. However, because of the anatomical conditions, the procedure is not so harmless or efficacious as incision into an ordinary abscess. The mortality has been reported at from 17 to 70 per cent.

The operations for removal of the focus are the pneumectomies in which pulmonary parenchyma is resected. Pneumectomy may be typical, an entire lobe being removed (lobectomy), or atypical, only a single focus of suppuration being destroyed. The principal difficulty in the typical operation is the treatment of the bronchovascular pedicle. The mortality ranges from 40 to 57 per cent. The operation may be performed in one or more stages. Its cures are more complete than those of atypical pneumectomy.

Chief among the atypical pneumectomies is the Graham pneumectomy in which the diseased area of lung tissue is destroyed with the thermocautery in several stages. The chief danger is hemorrhage. Cure is rarely absolute and the persistence of bronchoparietal fistulae causes a distressing infirmity. The mortality reported by Graham in 1928 was 6.6 per cent.

Various other types of atypical pneumectomy have been devised, some of them combined with thoracoplasty and complete exteriorization of the lobe, and some with partial exteriorization of the involved portion of lung.

The choice of operation must not depend upon the surgeon's preference alone. It must be based upon the anatomicopathological conditions, the topography and anatomical site of the focus, the peripheral reaction of the parenchyma, and the drainage by the natural routes. As these determinations cannot always be made by clinical and roentgenological examinations, the following general theoretical rules should be borne in mind.

When the abscess is deep or near the hilum, artificial pneumothorax or bronchoscopy may give good results. An apical lesion may be attacked by apicolysis or thoracoplasty. For a basal lesion, phrenicectomy is to be considered. Superficial cortical lesions are best treated by pneumotomy or pneumectomy.

If the lesion is circumscribed, pneumotomy or elective compression by apicolysis is the operation of choice. When the focus is diffuse, extrapleural thoracoplasty or pneumectomy should be considered.

If the surrounding parenchyma is still elastic, pneumotomy or collapse is indicated, whereas if the process is surrounded by a shell of pyosclerosis and gangrene, pneumectomy must be undertaken.

If the focus has a free communication with the bronchi, collapse therapy is possible, but if drainage is lacking or limited, only pneumotomy and pneumectomy may be done. FRANK B. BEREX, M.D.

Denk, W. Is Phrenicotomy Indicated in Non-Tuberculous Bronchiectasis? (Ist die Phrenicotomie bei nicht tuberkulösen Bronchiektasien angezeigt?) *Wien klin Wchschr*, 1932, 1, 735.

Because of the numerous anastomoses of the phrenic nerve and the occasional presence of an accessory phrenic nerve, simple phrenicotomy (section of the phrenic nerve) is to be regarded as only an incomplete operation. To put the diaphragm at rest, the phrenic exeresis suggested by Felix or the radical phrenicotomy advocated by Goetz is necessary. The success of the operation requires a knowledge of the site, stage, and character of the pulmonary disease. The procedure primarily relieves the tension of the lung as a whole and secondarily produces compression of the lower lobe.

Simple phrenicotomy is usually insufficient to cause collapse of the rigid cavities found in chronic bronchiectasis with secondary scar formation. Therefore in this condition no noteworthy beneficial effect can be expected from it as a rule. On the other hand it has proved of value in cases of basal contraction bronchiectasis of short duration, especially those with basal cavities due to destruction of the pulmonary parenchyma, and occasionally it gives good results also in cases of older and more extensive disease. HAAGEN (Z).

ESOPHAGUS AND MEDIASTINUM

Wenner, H. On the Treatment of 100 Cases of Carcinoma of the Esophagus (Zur Therapie des Oesophaguscarcinoms. Bericht ueber 100 Faelle von Oesophaguscarcinom) 1932. Bonn, Dissertation.

In 30,000 cases of carcinoma, the incidence of carcinoma of the esophagus was 3.5 per cent. Cases of esophageal cancer constituted 64 per cent of all cases of disease of the esophagus. Over 90 per cent of the patients with carcinoma of the esophagus were males. Metastases of carcinoma of the esophagus occurred late and then only in from 60 to 75 per cent of the cases.

Carcinoma of the esophagus develops usually at the points of anatomical narrowing of the esophagus. In over one-half of the cases it occurs in the middle third. In nearly one-half of the cases it occurs between the ages of fifty and sixty years. Patients usually come for treatment late, the initial slight difficulties in swallowing being disregarded. Today

the diagnosis is made with the aid of the roentgen ray and the oesophagoscope. Biopsy is apparently not harmless.

Surgical removal of the carcinoma is successful in very few cases. In the 100 cases reviewed by the author extirpation of the neoplasm was attempted only once. Except for the purely palliative formation of a gastric fistula, the treatment now preferred is irradiation with the roentgen rays or radium or both. In the radium treatment, a carrier containing from 50 to 100 mgm. of radium element is applied to the carcinoma by sound or oesophagoscope or by means of thread through a gastric fistula. The carrier is a brass or platinum capsule. This method of treatment is not without danger as it may cause perforation or haemorrhage. Roentgen treatment may be given over a large anterior field or several smaller fields. According to the Bonn clinic, the best results

are obtained by a combination of roentgen and radium irradiation.

Of 36 patients treated with the roentgen rays alone, only a man fifty-six years old was still alive two years after the last irradiation. Of 2 patients treated with radium alone, one died after four months and the other was in good condition when re-examined two months after the last treatment. Nineteen patients were treated with both roentgen and radium irradiation. Three who were so treated after the formation of a gastric fistula died from seven to eleven months after the diagnosis was made. Of the 16 treated without the formation of a gastric fistula, 11 died and 5 were alive from four to sixteen months after the diagnosis was established. Three of the latter are now suffering from difficulty in swallowing, whereas 2 feel well (1 sixteen months after the diagnosis was made). Sauer G.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Pytel, A. Gastro-Intestinal Hemorrhages After Operations for Non-Strangulated Inguinal Hernia (Ueber Magendarmblutungen nach Operationen nicht eingeklemmter Leistenbrueche) *Acta chirurg Scand*, 1932, lxx, 93

Pytel reports the case of a man twenty years of age who had an intestinal hemorrhage which began forty-eight hours after a radical operation for a non-strangulated bilateral inguinal hernia and continued for five days. The hernial sac was found empty, and no manipulation of the organs of the abdominal cavity was done. The patient recovered.

The conclusions drawn by the author are as follows:

1. After extra-abdominal operations and after herniotomy for non-strangulated inguinal hernia in which there was no trauma to the organs of the abdominal cavity gastro-intestinal hemorrhage is extremely rare.

2. The most important factors in this hemorrhage are retrograde embolism of the intestinal blood vessels and the tox-infectious process.

3. The prognosis is usually unfavorable, the average mortality being 65 per cent.

4. The complication is best treated conservatively.

Devine, H. B. The Surgery of Encapsulating Chronic Peritonitis. *Brit J Surg*, 1932, xx, 204.

Devine reports a case of encapsulating chronic peritonitis which occurred in his earlier practice and a case seen more recently. In the second case all of the loops of bowel were bound together by a very tough glistening membrane so that it was impossible to shortcircuit around the obstruction. The membrane was dissected off carefully but with difficulty. About three months later more adhesions formed. Treatment by roentgen irradiation resulted in disappearance of the abdominal tumor.

In discussing the etiology the author assumes that the condition is the same as that called by the Germans "Zuckergussdarm" (sugar-casting intestine). Several stages are noted. In the early stage the patient may have slight attacks of colicky periumbilical abdominal pain. These may be associated with loss of energy, loss of appetite, a tendency to faint, and attacks of sweating. Macroscopic examination shows white, membranous, cartilaginous plaques irregularly distributed on the small intestine. These tend to contract and thereby interfere with peristaltic movement. The membrane is strikingly limited to the stomach, small intestine, and liver. In the middle stage of the condition multiple intestinal stenoses and multiple tumor formations

may occur. The tumor formations are apt to be mistaken for true tumors. Macroscopic examination reveals a tough, opaque membranous shell from 2 to 5 mm thick which is intimately attached to the parietal peritoneum. A number of causes have been suggested for the condition. It is thought to be due to syphilis and tuberculosis.

In cases with intestinal obstruction the treatment consists of operative interference and removal of as much of the membrane as possible. When obstruction is not present, roentgen-ray irradiation should be given.

ALTON OCHSNER, M.D.

GASTRO-INTESTINAL TRACT

Klose, H., and Bernstein, A. Pyloric Hypertrophy in the Adult Considered as a Clinical Entity (Die Pylorushypertrophie des Erwachsenen als selbststaendiges Krankheitsbild) *Med Welt*, 1932, p 440.

Reports in the literature demonstrate the occurrence of a benign pyloric stenosis caused by hypertrophy of the muscularis which may present a picture closely resembling that of ulcer with or without stenosis. The hypertrophy is followed by spasms. The roentgenogram, which shows narrowing of the pyloric canal to the diameter of a lead pencil, may suggest carcinoma, but as a rule the regularity of the stenosis, which is usually several centimeters long, permits a differential diagnosis from cancer.

Four cases are reported briefly. The patients were over forty years of age and for several years had suffered from gastric disturbances with signs of stenosis. The roentgen examination disclosed more or less marked stenosis of the gastric outlet. Operation revealed a tumor-like thickening of the pylorus which on microscopic examination was found to be merely hypertrophied muscle. As the differential diagnosis from carcinoma cannot always be made with certainty, an exploratory laparotomy should be advised in doubtful cases. The surgical treatment of choice is resection.

HUGO PERL (Z)

Konjetzny, G. E. Pyloric Hypertrophy in the Adult Considered as a Clinical Entity (Die Pylorushypertrophie des Erwachsenen als selbststaendiges Krankheitsbild) *Med Welt*, 1932, p 728.

In referring to the reports of Klose and Bernstein, Konjetzny reviews the disease conditions which belong to the classification of benign hypertrophy of the pylorus in adults. The first to be considered is the benign hypertrophy of Cruveilhier which has been discussed in the literature under numerous names, the best known of which are "limitis plastica" and "hypertrophic gastric sclerosis." The essential features of this condition are the diffuse sclerosis of

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Of 36 patients treated with the roentgen rays alone only a man fifty-six years old was still alive two years after the last irradiation. Of 2 patients treated with radium alone, one died after four months and the other was in good condition when re-examined two months after the last treatment. Nineteen patients were treated with both roentgen and radium irradiation. Three who were so treated after the formation of a gastric fistula died from seven to eleven months after the diagnosis was made. Of the 16 treated without the formation of a gastric fistula, 11 died and 5 were alive from four to sixteen months after the diagnosis was established. Three of the latter are now suffering from difficulty in swallowing, whereas 2 feel well (1 sixteen months after the diagnosis was made) SAXEN (2).

gastro-enterostomy, in 8, a posterior gastro-enterostomy with pyloric exclusion, in 2, a Billroth I resection, and in 1 a Billroth II resection. In 21 cases occult blood was found in the stools. The degree of hæmorrhage was proportional to the penetration of the ulcer into the mesocolon or mesentery.

Most of the postoperative gastrojejunal ulcers occurred in cases of duodenal ulceration with marked hyperacidity. The postoperative lesion was localized in the stoma and extended toward the efferent loop. Only rarely was the afferent loop involved. Postoperative ulcers developed most frequently after anterior gastro-enterostomy with pyloric exclusion.

The clinical diagnosis should not be difficult when there is a history of surgery for gastroduodenal ulceration followed by inadequate postoperative relief and recurrence of the typical postcibal pain localized to the region of the stoma, usually slightly to the left of the umbilicus. Melæna may be considered confirmatory evidence of postoperative gastrojejunal ulceration. The roentgenographic findings may suggest closure of the operative stoma, but this is usually due to spasm, œdema, and inflammation caused by the recurring lesion.

In the treatment of these postoperative gastrojejunal lesions palliative conservative surgery was consistently ineffective in establishing a cure. In all of the 5 cases in which the intervention consisted of a Braun anastomosis, another recurrence necessitated a third operation. Of 6 cases in which the gastro-enterostomy was undone, death occurred from low duodenal stenosis and from subsequent perforation of the duodenal ulcer in 1 case each. In another case in this group a third operation was necessitated by secondary duodenal stenosis, and in a fourth case a second gastro-enterostomy was followed by new gastrojejunal ulceration which necessitated radical intervention. In the 2 other cases the patients still have subjective complaints from their original lesion. Similar unsatisfactory results were obtained with other types of palliative surgical intervention such as the performance of a second gastro-enterostomy when it was decided that the first one was closed, and the performance of a Roux Y anastomosis for the gastrojejunal lesion.

The experience in these cases confirms the opinion that the best ultimate results are obtained by radical resection plus gastro-enterostomy preferably of the Reichel Polva terminolateral type.

SAMUEL J. FOGELSON, M.D.

Newcomb, W. D. The Relationship Between Peptic Ulceration and Gastric Carcinoma. *Brit. J. Surg.*, 1932, 25, 279.

In the period from 1880 to 1890 Hauser and Zenker popularized the view that cancer may be frequently superimposed on gastric ulcer. In 1898, Duplant concluded that the grafting of carcinoma on ulcer is impossible. In 1912, Stromeyer, and in 1924, Moskowitz of the Aschoff school expressed the opinion that ulceration of primary carcinoma is more com-

mon than cancerization of ulcer. Similar views have been expressed also by others.

The chief exponents of the theory that most gastric carcinomata arise in pre-existing ulcer have been the surgeons and pathologists of the Mayo Clinic. Beginning with a report by W. J. Mayo in 1907, a long series of articles have been published by McCarthy, Broders, Wilson, and others expressing the view that from 50 to 70 per cent of gastric cancers arise in ulcers.

The material on which the author's investigation was based consisted of all of the portions of stomach from surgical operations which were received in the Department of Pathology, St. Mary's Hospital, London, in the period from January, 1920, to April, 1931, inclusive.

To determine the relationship of peptic ulcer and gastric carcinoma it is necessary first to consider the morbid anatomy and histology of these lesions. This is complicated by the variation in the appearance of ulcer as the so-called chronic ulcer arises from an acute ulcer in which healing has been delayed and represents the balance at any time between successive attacks of acute digestion alternating with periods of healing.

The size, number, shape, and margins of the ulcer are not of much assistance in the solution of the problem. Of the chronic ulcers reviewed, the muscular coat was destroyed in all but 5. In the active phase the muscular fibers may stop abruptly at the edges of the ulcer, but more frequently are separated by œdema, granulation tissue, or fibrosis spreading between the fibers. As the healing process progresses the overhanging muscularis mucosæ and the spread-out fibers of the muscularis become approximated and eventually fuse. This close approximation of the muscularis and muscularis mucosæ was present in some part of all but 2 of the ulcers studied.

Healing begins with separation of the slough formed by the necrotic tissue and fibrin. Epithelium grows in over the surface of the granulation tissue base as a single layer of cubical or flattened cells which proliferate and send small downgrowths of epithelial (mucosal) cells into the granulation tissue. Simultaneously, the latter pushes up small papillary processes. If, at the same time, the newly formed fibrous tissue on which the epithelium is resting contracts, it will draw down actively growing epithelium into the deeper tissues. As a result, atypical regenerating epithelium at the edge of ulcers is frequently misplaced and may be situated deep in the submucosa or even in the muscularis. This is a frequent finding in healing ulcers. Of 161 ulcers studied, it was noted in 44. The heterotopic active growth of epithelial cells is not carcinoma, but the result of the healing process of ulcer.

For the purposes of the study herewith reported the ulcerated infiltrating carcinomata were of the most importance as these are the lesions often thought to arise in peptic ulcer. Thirty-three were studied. The crater may extend to any depth or even penetrate the stomach wall. It varies in size

the submucosa and hypertrophy of the muscularis propria. In Konjetsky's opinion, the most important of the numerous causes suggested are gastritis simplex and gastritis phlegmonosa. The cases reported by Klose and Bernstein were cases of benign hypertrophy of the pylorus involving chiefly the muscularis propria. In Konjetsky's opinion they were essentially of an inflammatory nature and evidently only a variant of the first form. At any rate this form cannot be regarded as a disease entity because hypertrophy of the musculature of the antrum develops just as frequently in the presence of, or as a result of, gastritis. A distinct form of the disease is caused by adenomyomata and circular chronic hypertrophy of the mucosa. The first of these is very rare.

Clarification of the pathogenesis is essential for treatment.

PUREL (Z)

Brohee, G.: Intermittent Painful Volvulus of the Stomach. (*Le volvulus intermittent douloureux de l'estomac*). *Arch. franco-belge de chir.* 1911 1933 xvi, 416.

Although acute volvulus of the stomach has been known for a long time, the subacute intermittent form has received little recognition. The crises of pain and vomiting are generally ascribed to pyrospasm or biliary tract disease. Only a careful examination by a roentgenologist familiar with the condition clarifies the diagnosis.

Volvulus generally occurs in middle-aged persons particularly women who are prone to relaxation of the abdominal walls, visceroptosis, atrophagia, and colonic stasis. Organic disease may or may not be present. A neurosis with atrophagia is common.

The mechanism by which the volvulus is produced is variable. Volvulus "par refluxement" results when the distended splenic flexure pushes the left border of the stomach to the right and posteriorly or anteriorly. By this mechanism the greater curvature in the midgastric region is folded over onto the lesser curvature. The roentgenogram shows a bilocular stomach with stasis in the upper pouch. In this fashion the antrum, pylorus, and even the first portion of the duodenum may be rotated. Occasionally the transverse colon carries the greater curvature upward to produce a torsion of most of the stomach below the fundus.

A false roentgenographic picture of volvulus is produced when the distended transverse colon or splenic flexure lies between the midgastric region and the anterior abdominal wall. The image is that of a bilocular stomach.

Volvulus is generally preceded by vague digestive symptoms, such as eructations and transient epigastric pain, which are without definite relation to eating and may be masked by cholecystitis or appendicitis. The occurrence of the volvulus is accompanied by sudden violent pain in the left upper quadrant of the abdomen. There is often a certain degree of shock. The pain may radiate to the back or the iliac region, and girdle pain may be present.

Eructations and regurgitations of clear fluid come, but give no relief.

The physical signs consist of excessive tympany over the space of Traube, the transverse colon, and the splenic flexure and sometimes over the descending colon as well. There is little pain on palpation and no contracture of the recti. The eructations soon cease and nothing is passed by bowel. The pulse remains about normal and the general condition good.

The duration of an attack varies from a few minutes to a couple of days. It ends either suddenly as it began.

Between attacks, a roentgenological examination may reveal the source of the trouble, the deformity of the stomach pending in some degree.

At operation no abnormality of the stomach is discovered as a rule unless the volvulus has been maintained by perigastric adhesions. In one case, however, a groove in the stomach wall indicated the axis of torsion. Nothing is known of lesions of the mucosa.

The diagnosis of volvulus is based upon the following characteristics: sudden onset and sudden recovery in a neurotic patient with enteroptosis, predominance of the pain in the left upper quadrant with a girdle sensation, resistance of the pain to sedatives, slight alteration of the general condition, an approximately normal pulse and temperature, distention of the left upper quadrant of the abdomen, difficult and only slightly productive sucking, and absence of physical signs such as muscular rigidity, pain on palpation, distention, intestinal sounds, and visible peristalsis.

The treatment in a given case may be medical or surgical or both. During an attack, sedatives, high enemas, and the knee-chest position give quick relief. Between attacks the predisposing conditions should be dealt with and concomitant disease investigated.

The treatment of the anatomical fault consists of shortening the lesser omentum and various parts of the stomach and the splenic flexure. Any surgical measure should be accompanied by a complete exploration of the abdominal cavity.

The article is concluded by a detailed analysis of nine case histories. ALBERT F. DE GROOT, M.D.

Valdoni, P.: Observations on Postoperative Gastrojejunal Ulcer. (Alcune considerazioni sull'ulcera peptica digiuno postoperatoria). *Pubblic. Rom.* 1912, xxxix, ser. chir. 444.

The number of cases of postoperative gastrojejunal ulcer seen in the clinic of Alessandrini increased from 7 in 1911 to 14 in 1913 to the 31 reviewed in this article. A similar progressive increase has been reported from other clinics. In 1916, von Haberer reported 20 cases, and in 1930, 21 cases in which he had performed a resection.

Of the 31 cases reviewed in this article, the primary lesion was a duodenal ulcer in 30 and a gastric ulcer in 1. In 37 cases the primary operation was a posterior gastro-enterostomy. In 4, an anterior

that obtained from the intestinal loop lying below the site of a high intestinal obstruction, the author treated macerated intestinal mucous membrane with alcohol, ammonium sulphate, and sulphuric acid. He was able to show that the mucous membrane extract can be divided into two parts, one which is soluble in alcohol and one which is not soluble in alcohol. In the latter, the toxins correspond in effect to the substances precipitated by ammonium sulphate and sulphuric acid.

On intravenous injection of the alcohol-soluble and alcohol-insoluble toxins, the blood pressure falls in the experimental animal, and when a large dose is given the animal dies with the symptoms of shock. The alcohol-soluble toxins are thermostable and are not detoxicated by the addition of serum and bile, whereas the alcohol-insoluble toxin substances are thermolabile and lose their effect when serum and bile are added.

In the healthy dog both of the toxic substances are most abundant in the mucous membrane of the duodenum, next most abundant in that of the remainder of the small intestine, and least abundant in that of the large intestine. In the dog with ileus there is a large increase of both toxins in the mucous membrane of the intestinal loop below the site of the obstruction.

The alcohol-soluble toxins may be further subdivided into ether-soluble and ether-insoluble toxins. The effect of both is exactly similar to that of the alcohol-soluble toxins.

The author assumes that the ileus toxin is the alcohol-soluble substance which markedly increases in the mucous membrane of the intestinal loop below the site of high intestinal obstruction and cannot be entirely detoxicated by serum. The alcohol-insoluble non-dialyzable toxins which are detoxicated by serum and bile, he regards as of secondary importance.

He concludes that the contents of the obstructed intestinal loop in high intestinal obstruction are a factor in the development of ileus toxins, as is claimed by the numerous supporters of the intoxication theory, but that a more important rôle is played by the mucous membrane of the intestinal loop which lies below the site of the obstruction, especially the mucous membrane of the ileum and large intestine.

LOUIS NEUWELT, M.D.

Chifflet, A. An Anatomicosurgical Study of the Duodenojejunal Angle (Estudio anatomicoquirurgico del ángulo duodenojejunal), *An Fac de med, Univ de Montevideo*, 1932, xvii, 382.

From his study of the duodenojejunal angle, Chifflet concludes that the name "duodenojejunal fossa" should be restricted to the fossa having constant relations with the duodenum and jejunum, and that Jonnesco's duodenojejunal fossa should be called the "jejunomesocolic fossa" or, better, the "duodenojejunomesocolic fossa."

Lowering of the duodenojejunal angle requires (1) detachment from left to right of the fourth por-

tion of the duodenum by Clairmont's maneuver, (2) incision of the peritoneum to the right of the duodenojejunal angle by detachment of the right surface of this angle, and (3) rupture of the intervening flap by separation with the finger and section of the muscle of Treitz.

Detachment of the mesentery from the first loop of the jejunum touching the fourth portion of the duodenum should be made with great care as the primary jejunal artery is very close to the viscus. However, the general disposition of the blood vessels in the vicinity does not offer any obstacle to the lowering of the duodenojejunal angle.

While in some cases the fourth portion of the duodenum and the duodenojejunal angle are supplied by arteries with numerous anastomoses, in other cases they are supplied by terminal branches which necessitate great care in partial resections. As the dissection of these terminal branches is very laborious and cannot be carried out in the living subject, the author believes it best to make resections sufficiently ample to exceed the limits of the two types of circulation as it is always possible to find an arrangement without anastomoses.

ELLA M. SALMOYSEN

Lefort, A. Diverticulum of the Third Portion of the Duodenum, Resection, Recovery (Diverticule de la troisième portion du duodénum, résection de ce diverticule, guérison). *Bull et mém Soc d chirurgiens de Par.*, 1932, xxi, 287.

Diverticula of the duodenum are quite rare. At the most, only about 100 cases can be found reported in the literature. In the first cases to be recorded, the diagnosis was not made before autopsy, but since the introduction of roentgenography it is possible during life. The diverticula may be present for a long time and occasionally may disappear spontaneously. They are generally believed to be most common in women over forty-five years of age, but some surgeons have found them with equal frequency in men.

According to 1 of the 2 chief theories as to their etiology, they are congenital. According to the other, they are acquired. Lefort, in agreement with Quénu and Lecène, believes that they are due to a mechanical factor associated with a site of lessened resistance in the duodenal circuit. When, for example, the latter is obstructed by the mesenteric cord, a hernia may develop progressively in the involved area. This theory seems to be favored by the dilatation of the second portion of the duodenum. The weak point in the duodenal wall may be created by the passage of a blood vessel through the muscular tunic or by the passage of the common duct through the duodenal wall. The diverticula formed at such points are pulsion diverticula. Diverticula may form also from a wrinkling of the duodenal wall in the vicinity of ulcers during the process of cicatrization. These are traction diverticula.

In support of the theory that diverticula of the duodenum are of congenital origin, Marie has de-

from 5.5 to 4.5 cm. Examination with a hand lens or of a section will usually show the carcinoma at the base of an ulcer spreading centrifugally in all directions, especially into the loose connective tissue of the submucosal layer separating the muscularis mucosae from the muscularis. Typically the growth can be seen invading the muscularis, running between the muscle fibers but not destroying them completely. If the growth has been present for some time the muscle may be completely destroyed in the center but as a rule a few muscle fibers can be seen. The finer histological structure of carcinoma does not affect the author's argument as occasionally the cells may be so few and arranged in such small groups that their epithelial nature may be difficult to determine.

The diagnosis of malignancy of a tumor in the stomach is no different from the diagnosis of the malignancy of tumors in other organs. The best evidence is the presence of metastatic growth in glands or elsewhere. This is definite proof of malignancy but as in most cases it will not have occurred it is not of much practical value and the diagnosis must depend on the more debatable characteristics such as variation in appearance and arrangement of individual cells and local infiltration. There may be an atypical arrangement of cells, variations in the size and shape of the cells, especially the formation of polygonal or polyhedral instead of cubical or columnar cells and variations in the nuclei, including central position and hyperchromatism. However any of these changes may be present in rapidly regenerating epithelium of ulcer. Infiltration of other tissues by epithelium is usually accepted as an indication of malignancy but the diagnostician must be certain that the epithelium is growing into the tissue and not merely misplaced as the result of a congenital defect or irregular healing. Heterotopic epithelium is not carcinoma.

It is usually arranged in definite tubes or acini, and the cells are regular with basal nuclei. Some of the high figures given for the proportion of cancer arising in ulcer are probably due to the mistaking of this heterotopic epithelium for cancer. Such epithelium was present in 44 (58 per cent) of 76 ulcers studied. If it had been taken for evidence of carcinoma, the number of ulcer-carcinomas would have been 50 instead of 6, the incidence of ulcer-carcinoma would have been 55.5 per cent instead of 15 per cent, and the incidence of malignant degeneration in ulcers would have been 31 per cent instead of 5.75 per cent.

In conclusion the author says that for the histological diagnosis of ulcer-cancer there must be definite evidence of both carcinoma and pre-existing ulcer. The only definite evidence of the latter not occasionally given by primary carcinoma is fusion of the muscularis mucosae and the muscularis at the edge of the ulcer. It is suggested that the presence of this criterion is as valuable as the demonstration of tubercle bacilli in the diagnosis of tuberculosis.

SAMUEL J. FORDHAM, M.D.

Bitter, Y.: An Experimental Study on the Pathogenesis of Ileus. The Site of the Toxin Formation in High Intestinal Obstruction (Experimentelle Untersuchung zur Pathogenese von Ileus. Bildungsorte von Gift bei hochgradiger Darmverengung). *Kioto Med. J.*, 1932, 31, 109.

In the experiments reported in this article, which were carried out on normal dogs, the author found that the greatest amount of toxic substances extractable by physiological salt solution is contained in the mucous membrane of the duodenum. The next largest amount is contained in the mucous membrane of the remainder of the small intestine, and the smallest amount in the mucous membrane of the colon. In a dog with high obstruction a large increase of the toxic agent was demonstrable in the intestinal loop that lay below the site of the obstruction (especially in the ileum and large intestine) whereas such an increase was not demonstrable in the mucous membrane of the duodenum above the site of the obstruction.

The author found also that in the early stage of intestinal obstruction the mesenteric venous blood of the different parts of the intestine is uniformly toxic, but in the course of time the toxicity of the blood in the mesenteric veins which collect the blood from the intestinal loop lying below the site of obstruction is greatly increased.

He was able to show also that as a result of extripation of the intestinal loop lying below the site of obstruction, the life of the dog with high intestinal obstruction was lengthened.

He found that during the high intestinal obstruction the contents of the intestines were toxic, but the toxicity of the contents of the obstructed loop was only very slightly increased.

On the basis of these findings he concludes that the mucous membrane of the intestinal loop lying below the site of obstruction must play a very important part in the development of the toxin of ileus.

The nature of the toxic agent in the intestinal mucous membrane of the healthy dog and the dog with intestinal obstruction was subjected to a very thorough investigation. It was shown that the effect of this toxic agent was markedly weakened or entirely destroyed by the addition of bile and serum and by heating. However on closer observation the author noticed that the toxic substances which are extractable from the mucous membrane of the intestinal loop lying below the site of obstruction cannot be completely detoxicated in this manner. Therefore it is evident that the toxic substances of the mucous membrane of the intestinal loop lying below the site of obstruction are not identical with the toxin found in ordinary extracts of intestinal mucous membrane, and that below the obstruction there are formed toxins which are resistant to bile, serum and heat and are not demonstrable or are demonstrable in only very small amounts in extracts of the intestinal mucous membrane of the normal dog.

In order to study further the character of the extract of the intestinal mucous membrane, especially

found. The author briefly reviews the literature on tumors of the appendix.

Of the 67 patients with carcinoma, the youngest was five and the oldest eighty years of age. The author points out that all authorities agree that the average age of patients with cancer of the appendix is much lower than that of patients with cancer of other parts of the gastro-intestinal tract. In a series of 78 cases McWilliams found that 60 per cent of the patients were below the age of thirty-eight years. Sex seems to be an important factor in the incidence of this disease as 67 per cent of the subjects were females.

There is a recent change in the viewpoint of pathologists regarding the etiology and origin of cancer of the appendix. Outstanding opinions advanced by German and French writers are summarized as follows:

1. The tumors represent true carcinoma derived from epithelium of the gastro-intestinal mucosa.
2. They may be considered analogous to basal-cell carcinomata of the skin.
3. They may be malformations belonging to the general group of tumors developing from pancreatic cysts, such as adenomyoma and accessory pancreas.
4. They may be derived from chromaffin cells of the crypts of Lieberkuehn.

On the basis of studies made with silver nitrate stains, the author and Forhus accept the fourth theory.

Inflammation is generally accepted as the foremost exciting cause of cancer of the appendix. Of the 67 carcinomata reviewed by the author, 7 were associated with subacute inflammation, and the remainder with chronic inflammation. Partial obliteration of the appendix was found in 90 per cent of the cases.

In a third of the cases symmetrical dilatation of the site of the growth was seen, while in a fifth there was irregular dilatation. In the remainder, no alteration in form was noted. In most of the cases the appendix was normal in size and color. The majority of the specimens showed complete or partial obliteration of the lumen, mostly in the distal one-third. Ulceration was not seen in any instance. In 11 per cent of the specimens the growth had extended through the serosa, this being evidenced by an orange-colored area over the surface. The tumors averaged 8.1 mm. in length and 5.2 mm. in width. They were in the distal one-third of the appendix in 92.2 per cent of the cases and involved the whole lumen in 7.8 per cent.

The frequency of cancer of the appendix is generally believed to be about 0.4 per cent and the ratio of cancer of the appendix to cancer of other parts of the intestinal tract 1:250.

Histologically, all but 2 of the specimens reviewed were of the small round-cell type. The 2 exceptions were of the columnar-cell variety. Of the specimens of the small round-cell type all showed obliteration of the lumen and 40 per cent showed normal mucosa replaced by an equal proportion of glandular nests

and connective tissue. In about 30 per cent the growth was made up of connective tissue stroma with few carcinomatous nests. In the remaining 30 per cent the lumen was obliterated by nests and strands of polygonal cells over a very scant connective tissue stroma.

The majority of the cells were round or oval. Those in the nests were closely packed, but the remainder were in a disorderly and loose arrangement. On section, the picture varied from normal glandular structures to degeneration, cloudy swelling, and vacuolization. The majority of the cancerous nests showed degeneration, a fact explaining why there were fewer cells with disorderly arrangement in some of the groups.

In 90 per cent of the cases there was complete invasion of the submucosa, in 80 per cent, extension of the cells without the groups, in 75 per cent, invasion of the circular muscle, and in 75 per cent, invasion of the longitudinal muscle.

In the 43,000 appendices, 2 polyps were found. One was situated in the middle third of the appendix in conjunction with a mucocele and the other at the base of the appendix. They consisted of mucosa and a small amount of submucosa. The glandular structures were well preserved. It is probable that the mucocele was caused by the polyp.

Three myxomata were discovered. The cells produced a stellate appearance with a tendency toward branching cytoplasmic processes. A definite line of encapsulation was not noted.

Venous hæmangioma is a rare tumor of the appendix. In the appendices studied only 1 was seen. Grossly, it appeared as a mottled brownish area over the surface of the organ, and on section it resembled a sponge and was reddish in color. Microscopic examination showed it to consist of a network of vessels partly filled with blood. The lining cells were large and swollen. The greater part of the growth was limited to the muscular layer and serosa. No other case of this lesion has been reported in the literature.

Mucocele was found in 36 of the appendices studied. Most of the patients were in the fourth or fifth decade of life, the period when retrogression and obliteration of the appendix takes place. Phemister is quoted as expressing the view that there is a definite relationship between the development of cysts of the appendix and normal involution of the organ.

Mucocele as large as a man's head have been reported. Their contents are serous, mucoid, colloid, and yellow or gray. Stained sections showed the pink stain of pseudomucin rather than the expected blue stain of mucin. However, mucoceles are known to contain true mucin even when the cells become histologically altered.

The condition most frequently associated with tumors of the appendix was cholecystitis, undoubtedly because of the well-known fact that appendicitis is found in a very high percentage of cases of gall-bladder disease and duodenal ulcer. Several

scribed their formation on the basis of embryology. He states that the duodenum is the part of the intestine with the greatest tendency to form buds which constitute the point of departure for the formation of organs (biliary tract, liver, pancreatic tract, and pancreas). He believes it possible that in the formation of these glands the duodenum undergoes invaginations which remain without function and persist as diverticula in adult life.

The diverticula are found most commonly in the second portion of the duodenum, as a rule in the perivaterian region. They are usually single, but several cases of multiple diverticula have been reported. They vary greatly in size from that of a mandarin orange to that of a hempeped.

Grégoire has shown that diverticula of the duodenum may occupy 3 different positions in relation to the pancreas. These may be described as follows:

1. The sac lies in front of the pancreas, in the peritoneal cavity and is covered with serosa.
2. The sac lies back of the pancreas in the retro-pancreatic tissue and has no connection with the peritoneal cavity. This is a common site which is difficult to discover.
3. The diverticulum may be intrapancreatic. This type presents great surgical difficulties. The common duct and the duct of Wirsung usually pass back of the diverticulum and may be in close contact with its posterior wall.

Diverticula of the third portion of the duodenum are generally situated in the vicinity of the superior mesenteric vessels. Diverticula often co-exist with ulcerative lesions of the duodenum.

Bernard distinguishes 5 varieties of symptoms due to diverticula of the duodenum:

1. Vague dyspeptic troubles such as distress and heaviness after the ingestion of food with nausea, but as a rule no vomiting.
2. Ulcer symptoms. These occur in 85 per cent of the cases. They consist of severe focal pain from two to three hours after the ingestion of food and habitual vomiting followed by relief.
3. Symptoms of pyloric stenosis with incessant vomiting, emaciation and cachexia.
4. Pancreatic symptoms, including pain in the region of the pancreas, slightly discolored stools, disturbances of the digestion of fat, anorexia, and vomiting. In fact, diverticula of the duodenum may cause chronic pancreatitis.
5. Hepatic symptoms with jaundice suggesting cholelithiasis.

When a diverticulum of the duodenum is found on roentgen examination the treatment may be either medical or surgical according to the severity of the symptoms. In cases with mild symptoms relief may result from medical treatment consisting in the administration of bismuth or kaolin in doses of 10 gm. morning and night for periods of ten days and the use of antispasmodics such as atropin or belladonna.

If the diverticulum causes much pain, only surgical treatment will give definite and lasting relief.

Resection is the operation of choice when it is possible, but if important vessels are included in the diverticulum or adhesions are present it may be dangerous. Invagination is less satisfactory but safer. However cases treated by this method have not been followed up for a sufficiently long period of time to permit conclusions as to whether a definite cure is obtained. In some cases a palliative operation such as gastro-enterostomy with or without exclusion of the pylorus may be indicated.

EDWIN S. MOORE.

Coit, G. H., and Morrison, M. M. M.: An Analysis of the Mortality in Acute Appendicitis with Respect to Drainage and the Variety of Operation. *Brit. J. Surg.* 1924, 22, 97.

This report is based on 1,413 cases of acute appendicitis treated in the period from 1911 to 1920. The cases treated in the period from 1913 to 1920 were admitted to the hospital earlier than those treated in the period from 1911 to 1913. The incidence of drainage was higher in the more severe cases than in the less severe cases. From 0 to 30 per cent of the cases in which there was free fluid but the appendix was not gangrenous were drained after the first twenty-four hours from 30 to 75 per cent of those in which the appendix was gangrenous but not perforated were drained after twenty-four hours and from 80 to 100 per cent of those in which the appendix was gangrenous and perforated were drained.

As the incidence of drainage was higher in the more severe cases, the mortality was highest in the drained cases. The mortality according to the periods of the disease was as follows: twelve hours, 0.51 per cent; twenty-four hours, 1.6 per cent; thirty-six hours, 2. per cent; forty-eight hours, 1.83 per cent; three days, 6.34 per cent; four days, 3.05 per cent; five days and over 6.86 per cent. The mortality in the entire group was 3.84 per cent.

In the period from 1911 to 1923, the mortality in cases in which the Battle incision was used was 4.5 per cent, in those in which the McBurney incision was used, 7.8 per cent and in those in which a paracostal incision was used, 10.93 per cent. However, the number of cases in which a paracostal incision was used was small. In the period from 1913 to 1920, the mortality in cases in which the Battle incision was used was 0.69 per cent whereas in those in which a paracostal incision was used it was 6.05 per cent. The authors attribute higher mortality following the use of the paracostal incision to the fact that this incision is associated with greater risk of spreading the infection. However they believe that if the appendix is in a median or pelvic position a short subumbilical paracostal incision is preferable to the Battle incision.

ALTON OGBURN, M.D.

Norment, W. B.: Tumors of the Appendix. *Surg. Gynec. & Obst.* 1924, 39, 500.

In a study of approximately 45,000 appendices carcinomas, myxomas, angiosarcomas, and mucocoeles were

found. The author briefly reviews the literature on tumors of the appendix.

Of the 67 patients with carcinoma, the youngest was five and the oldest eighty years of age. The author points out that all authorities agree that the average age of patients with cancer of the appendix is much lower than that of patients with cancer of other parts of the gastro-intestinal tract. In a series of 78 cases McWilliams found that 60 per cent of the patients were below the age of thirty-eight years. Sex seems to be an important factor in the incidence of this disease as 67 per cent of the subjects were females.

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On the basis of studies made with silver nitrate stains, the author and Forbus accept the fourth theory.

Inflammation is generally accepted as the foremost exciting cause of cancer of the appendix. Of the 67 carcinomata reviewed by the author, 7 were associated with subacute inflammation, and the remainder with chronic inflammation. Partial obliteration of the appendix was found in 90 per cent of the cases.

In a third of the cases symmetrical dilatation of the site of the growth was seen, while in a fifth there was irregular dilatation. In the remainder, no alteration in form was noted. In most of the cases the appendix was normal in size and color. The majority of the specimens showed complete or partial obliteration of the lumen, mostly in the distal one-third. Ulceration was not seen in any instance. In 11 per cent of the specimens the growth had extended through the serosa, this being evidenced by an orange-colored area over the surface. The tumors averaged 81 mm in length and 52 mm in width. They were in the distal one-third of the appendix in 92 per cent of the cases and involved the whole lumen in 78 per cent.

The frequency of cancer of the appendix is generally believed to be about 0.4 per cent and the ratio of cancer of the appendix to cancer of other parts of the intestinal tract 1:250.

Histologically, all but 2 of the specimens reviewed were of the small round-cell type. The 2 exceptions were of the columnar-cell variety. Of the specimens of the small round-cell type all showed obliteration of the lumen and 40 per cent showed normal mucosa replaced by an equal proportion of glandular nests

and connective tissue. In about 30 per cent the growth was made up of connective tissue stroma with few carcinomatous nests. In the remaining 30 per cent the lumen was obliterated by nests and strands of polygonal cells over a very scant connective tissue stroma.

The majority of the cells were round or oval. Those in the nests were closely packed, but the remainder were in a disorderly and loose arrangement. On section, the picture varied from normal glandular structures to degeneration, cloudy swelling, and vacuolization. The majority of the cancerous nests showed degeneration, a fact explaining why there were fewer cells with disorderly arrangement in some of the groups.

In 90 per cent of the cases there was complete invasion of the submucosa, in 80 per cent, extension of the cells without the groups, in 75 per cent, invasion of the circular muscle, and in 75 per cent, invasion of the longitudinal muscle.

In the 43,000 appendices, 2 polyps were found. One was situated in the middle third of the appendix in conjunction with a mucocele and the other at the base of the appendix. They consisted of mucosa and a small amount of submucosa. The glandular structures were well preserved. It is probable that the mucocele was caused by the polyp.

Three myxomata were discovered. The cells produced a stellate appearance with a tendency toward branching cytoplasmic processes. A definite line of encapsulation was not noted.

Venous hemangioma is a rare tumor of the appendix. In the appendices studied only 1 was seen. Grossly, it appeared as a mottled brownish area over the surface of the organ, and on section it resembled a sponge and was reddish in color. Microscopic examination showed it to consist of a network of vessels partly filled with blood. The lining cells were large and swollen. The greater part of the growth was limited to the muscular layer and serosa. No other case of this lesion has been reported in the literature.

Mucocele was found in 36 of the appendices studied. Most of the patients were in the fourth or fifth decade of life, the period when retrogression and obliteration of the appendix takes place. Phemister is quoted as expressing the view that there is a definite relationship between the development of cysts of the appendix and normal involution of the organ.

Mucocele as large as a man's head have been reported. Their contents are serous, mucoid, colloid, and yellow or gray. Stained sections showed the pink stain of pseudomucin rather than the expected blue stain of mucin. However, mucoceles are known to contain true mucin even when the cells become histologically altered.

The condition most frequently associated with tumors of the appendix was cholecystitis, undoubtedly because of the well-known fact that appendicitis is found in a very high percentage of cases of gall-bladder disease and duodenal ulcer. Several

surgeons have reported the discovery of cancer of the appendix in tuberculous patients. The author found four cases of cancer with associated latent tuberculosis.

Among the symptoms of tumors of the appendix there are few or none that will lead to a correct diagnosis. The symptoms are almost always those of chronic appendicitis. A study of the blood and gastric contents revealed nothing that would lead to the diagnosis of tumor. The author concludes that a pre-operative diagnosis is very difficult, if not impossible.

In a careful follow-up of all of the cases reviewed no recurrences were reported.

MURRAY A. SLOCUM, M.D.

Andrejev, L.: Causes of Recurrence of Pain After Appendectomy (Ueber Ursachen der Schmerzrezidive nach Appendektomien). *Nov chiz Arch* 1932, XIV, 450.

In the last two and a half years the author has seen 648 patients who sought treatment for gastro-intestinal disturbances following appendectomy. Most of them were between the ages of twenty and forty years and had suffered from abdominal pain for over a year. Five hundred and two (76 per cent) complained of pain of the same type as that which preceded the operation. The author discusses only the latter. Ten per cent of all of the patients were operated upon for acute appendicitis, and 90 per cent for chronic inflammation. Most of the recurrences developed after an operation for primarily chronic appendicitis without attacks. In evaluating the results of operative treatment it is necessary to differentiate between chronic recurring and primarily chronic types. Without doubt, the former must be operated upon immediately. The latter which often has only one characteristic in common with appendicitis—vague pain in the right iliac region—must be placed in the pseudo-appendicitis group and should never be operated upon until the nature of the disease has been determined. In the cases of patients suffering from so-called primarily chronic appendicitis a thorough clinical examination should be made and operation decided upon only after consultation with a specialist (in the cases of women, a gynecologist).

It appears definitely proved that the incidence of recurrence of pain after appendectomy is greater the less the pathologico-anatomical change demonstrated at operation. The most frequent cause of recurrence of pain is apparently an incorrect or inadequate diagnosis. A decidedly less frequent cause is abdominal adhesions. The latter were the cause in only 33 (5 per cent) of the 503 cases cited.

The indications for re-operation after appendectomy must be established with special care. Re-operation is indicated only for adhesions causing symptoms of ileus or for other definitely determined diseases requiring surgical intervention, such as cholecystitis, gastric or duodenal ulcer and renal stone.

O. ANDRÉV (2)

Coyosa, J. R., Bianchi, A. E., and Castro, J. A.: Syphilis of the Transverse Colon (Sífilis del colon transverso). *Arch. argent. de enferm. d. par. digest.*, 1932, VII, 870.

Syphilis of the intestine in general and of the colon in particular is quite rare, but the authors believe that it is often not diagnosed. Of 810 cases of various diseases of the colon which were found in the records of 11,431 patients admitted to the authors' clinic, 51 were cases of non-syphilitic affections in syphilis, 1 was a case of tumor of doubtful nature in the colon of a syphilitic, 1 a case of gummatous stenosis of the rectum, 1 a case of hemorrhagic syphilis of the colon and rectum, and 3 were cases of syphilitic tumors of the transverse colon.

The 3 cases of syphilitic tumor of the transverse colon are reported in detail and the histological findings are described and shown by photomicrographs. The clinical symptoms of such tumors are not characteristic of syphilitic disease of the colon, and the differentiation from malignant tumor and tuberculosis must be made by histological examination. The cases reported showed intense proliferation of the reticular connective tissue cells of the interstitial tissue, especially those at the periphery and around the blood vessels; many lymphocytes and plasma cells; a few granulocytes which were most numerous at the center of the infiltrated areas; infiltrative lesions of the arterioles (gummatous arteritis) and a few giant cells scattered irregularly through the infiltration. In the oldest parts of the tumor fibrous connective tissue predominated over the infiltrative cells and had given rise to the hard, white, thickened tumor mass. The infiltrative foci are generally multiple and follow the lymphatic capillaries. This explains the annular form of the tumors and their intense cicatricial retraction. Some cases present gummatous nodules and diffuse infiltration of the adipose tissue.

Syphilitic foci of the colon should be resected, as the changes which have been brought about are too great to be overcome by specific treatment and there is always danger of occlusion of the intestine. Macroscopically it is impossible to differentiate them from malignant tumors or tuberculosis.

The authors recommend resection and end-to-end anastomosis with a triple invaginating suture reinforced with a covering of omentum.

AURELIO GOMEZ MONDAX, M.D.

Winkley, G. E.: Colostomy Radiation Therapy and Perineal Reaction for Cancer of the Rectum. *J. Am. M. Ass.* 1932, XCII, 592.

The author discusses the treatment of cancer of the rectum by irradiation combined with colostomy and perineal resection and reports the results obtained in forty-two cases over a period of five years. The cases selected for this form of therapy were those suited for the perineal type of operation. Tumors of the lower part of the rectal and anal wall responded well. Carcinomata of the upper portion of the rectum and of the rectosigmoidal junctions are

usually treated more efficiently by other techniques. Clinical cures cannot be expected if the disease has spread beyond the reflection of the pelvic peritoneum, but extensive local infiltration can often be cared for adequately.

The sequence of the different procedures may vary, but in the majority of the cases reviewed it was as follows: (1) external irradiation, (2) colostomy, (3) interstitial irradiation, and (4) resection.

A full erythema unit of external irradiation was usually administered over the six portals of entry around the circumference of the pelvis and directed at the tumor mass. After this treatment the symptoms were reduced, many of the patients gained strength and weight, the tumor mass and areas of ulceration decreased in size, and the degree of infection was lessened.

In some of the cases radium appeared to cause a more striking clinical effect. External application of radium was administered at a distance of 15 cm from the skin by means of a 4-gm radium-element pack. This treatment extended over a period of about two weeks and was given daily or on alternate days.

From one to six weeks after the completion of the external applications the patients were admitted for colostomy. Colostomy may precede radiation therapy if there are obstructive symptoms. A double barrelled type of colostomy was done through a left mid-rectus incision halfway between the umbilicus and symphysis. The abdominal wound was closed in layers with a sufficient opening to admit the index finger in addition to the loop of sigmoid.

The interstitial application of radon seeds was carried out from seven to ten days after the colostomy. Gold-filtered seeds of 2 or 3 mc. were used until from 5,000 to 10,000 mc-hrs were assured. The seeds were implanted with the aid of long trocar needles. Their distribution was determined by the aid of direct vision through an electrically lighted speculum or was guided by the sense of touch with the index finger in the rectum.

The last step of the combined treatment consisted of surgical resection, which was usually carried out from seven to fourteen days after the interstitial treatment. The surgical difficulties were not increased by pre-operative therapy if no more than two weeks elapsed between the procedures. Practically all of the operations should be radical, including the removal of the anal canal and rectum and wide excision of adjacent tissues and occasionally of the coccyx. In cases in which the surgeon believes that not all of the malignant tissue has been removed postoperative irradiation may be given. Gold seeds may be implanted at the time of the operation.

The operative mortality in the forty-two cases reviewed by the author was 4.8 per cent. In twenty-seven cases there was gross extension of the cancer beyond the rectal wall. Of sixteen cases treated previous to 1925, a five-year clinical cure was obtained in 56 per cent. Of the twenty-six patients

who were treated within the last five years, sixteen are alive and well. Of the ten who died, three died from intercurrent disease.

ROBERT ZOLLINGER, M D

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Catalano, O., Conti, F., Francaviglia, A., Fenicia, M., and Lombardi, E. *Researches on Thorotrast (Ricerche sul thorotrast)*. *Rassegna scientifica di clinica e terapia*, 1932, XIII, 946.

Catalano states that thorotrast causes no immediate or permanent injury to the organism. He studied the changes in the walls and valves of the veins into which it was injected by taking roentgenograms during the injection. The liver and spleen were rendered opaque with only one-half of the suggested dose, in fact, the images of those organs were more distinct when the smaller dose was used. The opacity to the X-rays increased at first and persisted throughout the period of the author's observations, which was longer than a year.

The salts of thorium are deposited in the cells of the reticulo-endothelial system. Therefore when these cells are destroyed there is a defect in the shadow cast by the X-rays. The changes in the form and opacity of the liver and spleen permit the diagnosis of cysts, tumors, and infarcts. In diffuse diseases of the liver, such as cirrhosis and Banti's disease, there is an irregularity of the structure of the organ. Cirrhosis shows, in addition to these structural changes, zones of increased density which are interpreted as regenerating or hyperfunctioning hepatic tissue.

Francaviglia studied the changes in the blood nitrogen after the clinically and experimental injection of thorotrast. He found that as a rule there are only slight variations in the blood urea and residual nitrogen which may fall within the normal limits.

Fenicia studied the variations in the blood sugar in the dog and in man after the injection of thorotrast. He concludes that there is no damage to the sugar-regulating system, but he noted a tendency toward flattening of the glycaemic curve.

Lombardi studied the reaction of hæmolysins and agglutinins in rabbits in which the reticulo-endothelial system was blocked with thorotrast. He noted a diminution in the production of hæmolysins, but no change in the titer of agglutinins.

PETER A. ROSE, M D

Collins, A. N. *Abscess of the Liver*. *Minnesota Med.*, 1932, XV, 756.

The author reports fifty cases in which liver abscesses were found at autopsy. There was a history of pain in the upper part of the abdomen, in either the epigastrium or the liver area, in 73 per cent, of chills in 46 per cent, of sweating in 24 per cent, of vomiting in 48 per cent, and of tenderness in the upper part of the abdomen in 63 per cent. Autopsy disclosed abscesses in both lobes of the

liver in 63 per cent. In 30 per cent there had been a pre-existing liver or gall-bladder disease. In eleven cases the abscesses were associated with definite disease of the appendix and in eighteen with duodenal or gastric disease.

While the symptoms were not very diagnostic, the author concludes that pain in the upper part of the abdomen associated with irregular fever and perhaps with chills and jaundice, is very suggestive if it occurs in a patient with a history of abdominal infection and a large tender liver. He disapproves of blind puncture made in an effort to find the abscess and urges that all aspirations be done in the operating room. He emphasizes that early drainage of the abscess is desirable.

LOUIS P. GARDNER, M.D.

Venable, C. R.: Rupture of the Pancreas. *Surg. Gynec. & Obst.*, 1933 1: 652.

Rupture of the pancreas is rare as compared with the rupture of other solid abdominal viscera. The literature and textbooks give little information on the subject. The author urges that more consideration be given to the diagnosis of pancreatic injury following abdominal trauma.

The symptoms vary in the different degrees or types of complete and incomplete rupture of the gland and depend to a considerable extent on whether bleeding occurs immediately or after a period of apparent recovery from the initial severe symptoms. Early recognition and prompt intervention are necessary to reduce the mortality.

The author briefly reviews the anatomy and physiology of the pancreas. The danger that trypsinogen may be activated by being changed into trypsin by the bile or duodenal contents is pointed out. This explains the important rôle of diet in the treatment of pancreatic injury. It is this chemical change that produces the frequently noted delayed or secondary hemorrhage.

Anatomically, the pancreas is better protected against injury than any other viscus. Venable believes that it is torn by contrecoup rather than by being crushed against a vertebral body.

A rupture occurring within the peritoneal covering of the pancreas is called incomplete. When the so-called capsule is torn the rupture is called complete. Either type of rupture may or may not be associated with concurrent or delayed hemorrhage. Unless the obvious signs of intra-abdominal hemorrhage are present, it is impossible at the time of the injury to tell if the lesion is complete or incomplete.

The symptoms of pancreatic injury resemble those caused by a blow to the solar plexus. Intense pain in the epigastrium and collapse are accompanied by pallor, dyspnea, cyanosis about the lips, a cold sweat, a rapid pulse, and a drop in the blood pressure. It is well to remember however that there are records of many cases in which the pain and collapse were not pronounced and the initial injury was considered trivial. The upper abdomen is rigid and the diaphragm is splinted, especially on the left

side. The splinting of the diaphragm continues after the abdominal muscles relax. Vomiting occurs if there are gastric contents. As the collapse subsides, the abdomen softens, the pulse returns to normal, and the respiration becomes less embarrassed although the diaphragm remains somewhat splinted. At this stage, unless there is hemorrhage it may be difficult to differentiate the condition from simple solar plexus trauma. However, if symptoms of severe injury persist, a pancreatic rupture should be suspected.

The diagnosis becomes clarified by the characteristic course of events that soon follow. Spasms of the upper recti, localized tenderness which is most marked on the left side, and pain in the epigastrium or back, which may be intense, intermittent, or constant indicate pancreatic rupture. The pain suggests an incomplete rupture and is due to tension within the capsule. When the latter gives way the tension is relieved and the pain subsides. Before the formation of a pseudopancratic cyst there is a period of well-being.

The patient may be ambulatory but walks stooped over holding his hands over the upper abdomen. Especially when he is in the prone position he will vomit food and water. The vomiting occurs because the lesser peritoneal cavity contains a collection of fluid due to early closure of the foramen of Winslow. The fluid causes no symptoms or irritation unless the trypsin has become activated or unless steapsin has come in contact with the fat in the mesentery or omentum. In estimating or anticipating damage done by ferments it is necessary to bear in mind the fact that the pancreas supplies its ferments only on demand. Therefore the statement of certain investigators that pancreatic fluid has no effect on peritoneal surfaces must have been based on the fact that trypsinogen remained unactivated and steapsin occurred in negligible amounts or had no material to work upon.

As pancreatic fluid collects, a tumor mass forms in the upper left paracolic abdomen and flattens the stomach so that it can retain only a small amount of contents. The tumor increases in size, and rapid loss of weight occurs.

Between the time of the initial injury causing incomplete rupture and the formation of the pseudocyst, days or even years may elapse. However, the possibility of activation of the trypsinogen and the consequent danger of hemorrhage or intraperitoneal rupture of the cyst must be borne in mind.

Rapid development of the tumor mass is conclusive evidence of hemorrhage with complete rupture.

During the interval of improvement and the return to normal or nearly normal, the picture of lowered metabolism presents itself. General debility, anæsthesia, and subnormal temperature are evident.

In the foregoing paragraphs the author has attempted to describe the course of events in the formation of the two types of cysts of the pancreas following trauma (1) the pseudocyst that forms

slowly and sometimes is not recognized for years because there is a balance of pressure or healing occurs in the rent in the organ and the symptoms are mild, and (2) the rapidly forming cyst associated with extreme mechanical epigastric distress and persistent vomiting which requires rather prompt surgical relief.

An associated hæmorrhage may be immediate or late. When it occurs immediately, we know only that there is a rupture of a viscus in the upper part of the abdomen which is causing hæmorrhage. Delayed hæmorrhage complicates the condition. It must be recognized early as it constitutes an urgent indication for surgical intervention.

Blood studies are of little diagnostic value until free bleeding into the peritoneal cavity takes place. Therefore frequent blood counts should be made during the period of observation when one is looking for the change from the incomplete to the complete type caused by digestion of a blood vessel.

When rupture of the pancreas is diagnosed or suspected, prompt surgical intervention is indicated. It is particularly important to intervene if the rupture is complete in order to prevent the occurrence of secondary hæmorrhage. One should not be misled by the period of reasonable well-being that follows the initial collapse in cases of incomplete rupture.

To expose the cyst the author uses an operative approach that passes through the mesocolon. The fluid contents are removed by aspiration. Bleeding points are ligated and the tear in the pancreas is sutured with linen. Catgut must never be used as it will rapidly digest when it is exposed to pancreatic ferments. Rubber-tube drainage is instituted and the drain brought out through a stab wound lateral to the incision. It is highly important to record the amount of drainage, its character, and the changes that may occur in it.

A rigid anti-diabetic diet is given. This controls the character of the pancreatic drainage by rendering it almost free from trypsinogen and steapsin. Alkalies are administered by mouth as the hydrochloric acid of the stomach incites the flow of trypsinogen. Calcium gluconate is regarded as preferable to sodium bicarbonate.

Skin irritation around the drainage tube may be prevented with xeroform.

The author reports five cases of pancreatic rupture that illustrate the most salient points in the early recognition of the condition.

MORRIS A. SLOCUM, M.D.

McWhorter, G. L. Acute Pancreatitis. A Report of Sixty-Four Cases. *Arch Surg*, 1932, **xxv**, 958.

This report is based on the experience of the author and thirty-one of his colleagues in sixty-four cases of acute pancreatitis. The following classification of the condition has been found satisfactory:

1. Acute idiopathic pancreatitis
 - a. Single oedematous or non-hæmorrhagic pancreatitis
 - b. Hæmorrhagic pancreatitis

c. Necrotic or gangrenous pancreatitis

d. Suppurative pancreatitis

2. Acute pancreatitis associated with malignancy

3. Acute pancreatitis following trauma

In the cases reviewed, gross infection of the pancreas was found more frequently in men than in women. In 55 per cent of the cases biliary tract disease was present. In none of the cases was there much evidence of the existence of a regional or distant focus of infection before the onset of the pancreatitis. Gall stones may interfere with the function of the biliary tract by causing pressure and obstruction. Acute inflammation of the gall bladder may predispose to pancreatitis, but probably is more often a complication.

In the cases reviewed the mortality was lower in those in which operation was performed immediately than in those in which it was done on the second to the fourth day after the onset of the disease. It was lower also in a few cases in which operation was performed at the end of the second week.

As death occurred in all of the cases in which operation was not performed, an early diagnosis is important and, unless the patient is moribund or shows definite signs of improvement, should be followed by an emergency operation. Drainage of the pancreas is advised for all cases except perhaps those of the mild oedematous type. Exploration of the biliary tract followed by drainage should be done in practically all cases, especially when inflammation, gall stones, or jaundice is present. In cases in which the infection is obviously localized in the pancreas, particularly after the first few days, drainage should usually be limited to the pancreas.

In a further effort to reduce the mortality, the attempt must be made to reduce the incidence of pancreatitis. This should include the prevention and treatment of obesity, gall stones, and focus of infection. The early removal of gall stones and operation on the gall bladder in acute and chronic cholecystitis may prevent hepatic, pancreatic, and other serious complications.

PAUL W. GREELEY, M.D.

Usland, O. Surgical Diseases of the Pancreas and Postoperative Pancreatic Complications. Clinical Studies (Chirurgische Pankreaserkrankungen und postoperative Pankreaskomplikationen. Klinische Studien) 1932 Oslo, Bjørnstad.

This is an exhaustive monograph on surgical anatomy of the pancreas, traumatic pancreatic injuries, acute pancreatitis, pancreatic affections in gastric and biliary tract disease, postoperative pancreatic complications, chronic pancreatitis, and pancreatic concretions, cysts, and solid tumors. It is supplemented by a bibliography.

The most frequent location of an accessory pancreas is in the jejunum, particularly from 10 to 15 cm below the duodenojejunal flexure, on the free border of the bowel opposite the mesenteric attachment. In 240 operations on the stomach the author found an accessory pancreas twice. In a girl nine-

teen years old who had suffered from a duodenal ulcer for from two to three years, operation disclosed, in addition to a large callosus ulcer of the duodenum, a bean-sized aberrant pancreas 10 cm. below the flexure. The latter showed islands of Langerhans and a definite efferent duct. There were no clinical symptoms thereof. In the case of a man forty-four years old operation disclosed, in addition to a duodenal ulcer with stenosis, a pea-sized diverticulum on the free border of the jejunum from 8 to 10 cm. below the flexure and at the level of the diverticulum a small tumor in the wall of the bowel which proved to be an accessory pancreas.

In discussing traumatic injuries of the pancreas the author reports the case of a man twenty-one years old who had an oblique rupture between the head and the body of the pancreas. The pancreas was divided into 2 portions. Fatal diffuse peritonitis resulted.

The author's clinical material included 6 cases of acute pancreatitis—2 of acute pancreatic necrosis, 1 of mild acute pancreatitis, and 3 of postoperative necrosis of the pancreas. One of the patients, a man sixty-three years old, was cured after laparotomy and drainage. A thirty-seven-year-old man with acute abdominal symptoms and increased diastase in the urine, recovered under conservative treatment. A fifty-four-year-old man with pancreatic necrosis, subsequent perforation of a callosus gastric ulcer and jaundice recovered after gastric resection and tamponade. In the case of a man fifty years old who was suffering from carcinoma of the stomach, the pancreas was injured during resection of the stomach with removal of carcinomatous glands behind the pylorus. The lesion was covered with omentum and the abdomen closed without drainage. The operation was followed by severe acute pancreatitis which resulted in death after two days. The author believes that tamponade and drainage should have been employed in this case. In the case of a man thirty-four years old cholecystectomy for cholelithiasis was followed by acute dilatation of the stomach. On re-operation, acute pancreatic necrosis was found. Death resulted. In the case of a man thirty-three years of age who had a callosus duodenal ulcer gastro-enterostomy was followed by a smooth convalescence for nine days, but at the end of that time retention occurred in the stomach and duodenum and several days later symptoms of pancreatic necrosis developed. Re-operation revealed such necrosis. The pancreatic capsule was split and tamponade, drainage, and anterior gastro-enterostomy were done. Although the abdominal symptoms subsided, suppurative peritonitis developed three days later. In spite of incision, necrosis of almost the entire parotid gland with destruction of the 2 lower branches of the facial nerve resulted. The patient recovered.

The author believes that in the diagnosis of acute abdominal disease diastase determinations are of the greatest importance. Normal values (125 or less) on the first or second days are strong indica-

tions of the absence of an acute pancreatic disease. Values of from 125 to 150 are of no diagnostic significance. Values above 515 with corresponding clinical symptoms may aid materially in checking the diagnosis. Values of 1,024 and over indicate disease of the pancreas or in its immediate vicinity. With values of over 4,000 there is usually an acute or complicating pancreatic lesion. In cases of operation on the stomach and biliary tract high readings indicate pancreatic involvement and diet becomes the treatment of choice.

Between January 1, 1924, and June 30, 1930, the author operated upon 23 patients for gastric or duodenal disease and 76 patients with disease of the biliary tract. One hundred and forty-one gastric resections and 70 gastro-enterostomies were done. Of 75 chronic gastric ulcers, 36 were near the pylorus and had no relation to the pancreas. Twenty-one of the latter were treated by resection and 15 by gastro-enterostomy. Of 17 ulcers which were at a distance from the pylorus, 10 were treated by resection and 7 by gastro-enterostomy. Four ulcers near the pylorus and 7 at a distance from the pylorus were adherent to the pancreas. All of these were resected. Three ulcers near the pylorus (1 treated by resection and 2 by gastro-enterostomy) and 8 at a distance from the pylorus (4 treated by resection and 4 by gastro-enterostomy) had penetrated into the pancreas. In none of these cases were there pancreatic symptoms after the operation.

Of the 11 cases of ulcer adherent to the pancreas, no postoperative pancreatic reactions were noted in those in which the ulcer was close to the pylorus, but such reactions occurred in 2 of the cases in which the lesion was at a distance from the pylorus.

Of the 11 cases in which the ulcer had penetrated into the pancreas, no postoperative reaction was noted in the 3 cases in which the ulcer was near the pylorus. Of the 8 cases of ulcer at a distance from the pylorus, fatal peritonitis developed in 1 from leakage of the suture line after resection. It is probable that the catgut sutures were digested too early by eroded pancreatic secretion.

Ten patients had gastric and duodenal ulcers. In 4, the lesion had no relation to the pancreas. In 3 cases of ulcer at a distance from the pylorus operation revealed adhesions to the pancreas and a duodenal ulcer with similar adhesions. Resection was done in all 3 cases. A postoperative pancreatic reaction occurred in 1. In 3 cases there were gastric ulcers at a distance from the pylorus with no relation to the pancreas and a concomitant duodenal ulcer which had penetrated into the pancreas. In 1 a postoperative pancreatic reaction occurred.

Of 83 duodenal ulcers, 35 (14 treated by resection and 21 by gastro-enterostomy) bore no relation to the pancreas, but 20 (14 treated by resection, with non-removal of the crater of the ulcer in 2, 6 treated by gastro-enterostomy) were adherent to it. Of 17 ulcers which had craters in the pancreas, 18 were treated by resection (without removal of

the crater in 15) and 9 were treated by gastro-enterostomy.

In the 35 cases of Group 1 and the 11 cases of Group 2 there were no postoperative pancreatic reactions. In the 14 cases of lesions near the pylorus in Group 3 there was no postoperative reaction. Of the 13 cases of ulcer at a distance from the pylorus, an acute postoperative pancreatic necrosis occurred following gastro-enterostomy in 1 and pancreatic reactions followed resection in 3.

In cases of carcinoma of the stomach and pancreas, 29 resections and 7 gastro-enterostomies were done. In 7 cases treated by gastro-enterostomy and 23 treated by resection there were no reactions. In 6 of the cases in which resection was done the author came in contact with the pancreas. In 1, a fatal acute postoperative pancreatic necrosis resulted.

In 9 cases in which resection was done because of retention, gastritis, or benign tumor, there were no postoperative pancreatic reactions.

There were 76 cases of disease of the biliary tract and pancreas. In 11, jaundice was present before the patient's admission to the hospital. In 5, the condition was due to common duct stone, in 2 to biliary tract and liver infection, in 1 to common duct stone and pancreatic involvement. In 3 cases pancreatitis was present.

The author reports 3 cases of chronic pancreatitis. The first was that of a man twenty-three years old who was subjected to gastro-enterostomy for ulcer. One year later resection was done. The patient then developed paratyphoid. Death occurred five years later from chronic pancreatitis of three years' duration.

The second case was that of a woman thirty-four years old who had gall stones for six months. Operation disclosed, in addition to gall stones, inflammation and a darkly discolored oedematous pancreas. Cholecystectomy and drainage were done. The patient was well for the next four years, but at the end of that time was suddenly seized with acute pains which were interpreted as indicating acute pancreatitis. After improvement, chronic symptoms developed. At operation, numerous calcifications were found in the superficial layers of the pancreas. Division of the capsule of the pancreas and partial removal of the calcium particles were followed by slow improvement.

The third case reported was that of a man forty-two years of age who was suffering from nephrolithiasis, alcoholism, and severe pancreatic colics. Laparotomy revealed chronic pancreatitis with calcium deposits.

The author reports a case of pancreatic concretion. The patient was a man thirty-six years old who was suffering from cholelithiasis. Cholecystectomy, choledochotomy, and incision into the duct of Wirsung through the wall of the duodenum were done. A nut-sized concretion was found deep in the pancreas. Recovery resulted.

The author reports 2 cases of pancreatic cyst. The first was that of a sixty-six-year-old woman

with rupture of the pancreas. Laparotomy with marsupialization, tamponade, and drainage was followed by recovery.

The second case was that of a woman twenty-six years old who was suffering from cholelithiasis, acute cholecystitis, acute pancreatitis, and a pancreatic pseudo-cyst containing 2 liters. Recovery followed cholecystostomy, marsupialization, tamponade, and drainage.

Of 3 cases of solid pancreatic tumors reported, 1 was that of a man seventy years of age who had jaundice, enlargement of the liver, and a large, tense gall bladder. X-ray examination disclosed a tumor of the head of the pancreas.

The second case was that of a woman sixty-two years of age in whom exploratory laparotomy revealed an inoperable carcinoma of the pancreas.

The third case was that of a woman sixty years of age who was suffering from pancreatic colics, gastric ulcer, and tumor of the pancreas. Operation included resection of the pancreas, posterior gastro-enterostomy, and ligation of the splenic vein. Microscopic examination of the pancreatic tumor showed it to be a carcinoma. The patient was well for two and a half years after the operation. She died from apoplexy.

KORITZSKY (2)

Santy, P. Hemolytic Icterus (L'ictère hémolytique) *J de chir*, 1932, 21, 546

Among the most important disturbances of the blood is the syndrome characterized by jaundice, splenic hypertrophy, and anæmia, the latter dependent upon excessive blood destruction. The original studies of this condition touched only on the familial form (Minkowski, 1900, von Krannhals, 1904, Chauffard, 1907). Later, Widal, Abram, and Brulé recognized an acquired form without any relation to heredity.

The icterus varies in intensity, being aggravated by fatigue, infections, and other factors and diminished by rest or a sojourn at a high altitude. There is no pruritis or other toxic sign. This is the only icterus which is without chæmia. Only pigments appear in the urine. The feces are lightly colored.

The liver is primarily little altered, but pigmentary calculi frequently form in the bile passages and greatly influence the ultimate prognosis.

Splenomegaly is constant, the weight of the spleen varying between 500 and 1,500 gm. Pain over the spleen is common and corresponds to an exacerbation of the hemolysis.

Anæmia is constant. This, with the icterus, gives the patient a very characteristic appearance. Exacerbations of anæmia are accompanied by an increase in the jaundice and occasionally by a sudden increase in the size of the spleen. The erythrocyte count is often about 3,000,000, but may fall to 800,000. Polychromatophilia, poikilocytosis, and anisocytosis are present. The erythrocytes are small and tend to be globular. The number of reticulocytes may reach 20 per cent. Occasionally nucleated red cells and myelocytes appear. Auto-agglutination

of the erythrocytes occurs only in the acquired form of hemolytic icterus.

Fragility of the erythrocytes is characteristic. In the congenital form of the disease hemolysis of whole blood occurs in a salt solution of 0.65 per cent and hemolysis of plasma free cells in a salt solution of 0.84 per cent. In the acquired form of the condition the fragility is normal in whole blood and hemolysis of washed cells occurs in a salt solution of 0.60 per cent. In determining the origin of the icterus the Van der Bergh test is of value.

Of late, the theory of purely acquired icterus has lost ground because in most of the cases there is a history of blood dyscrasias in the patient's antecedents and the disease may not become manifested until adult life is reached.

In arriving at a diagnosis certain types of anemia must be eliminated. Banti's disease is characterized by a slowly progressive anemia, slight icterus, reticulocytosis, polikilocytosis, and polychromatophilia. Fleming and Brodie report a certain degree of fragility. The disease has been confused with hemolytic icterus and even identified with it. Splenectomy is particularly efficacious.

The hemolytic splenomegaly with anemia and hemochromatosis of Marchiafava occurs as a preliminary to attacks of hemophthalmia, hemoidemia, fever malaise, and lumbar pains. In this condition splenectomy is of no benefit.

In pernicious anemia with splenomegaly (Strompell) the splenic enlargement is moderate and increases with exacerbations of the anemia. Subicterus, reticulocytosis, and increased fragility are present. Splenectomy gives durable cures.

The course of hemolytic icterus is ordinarily benign. A common complication is cholelithiasis. The mild or latent cases are probably held in check by a compensatory activity of the bone marrow. However, intercurrent infections, fatigue, and trauma may not infrequently disturb the equilibrium.

The first splenectomy for hemolytic icterus was done by Wells in 1837. The patient is still living and the diagnosis has been confirmed by the fragility test. The patient has a son who was cured of icterus by cholecystectomy and splenectomy.

The effect of surgical treatment has been variously interpreted. According to some, the spleen is the site of the blood destruction. Banti believed that splenectomy increases the resistance of the erythrocytes, but others are of the opinion that the spleen has nothing to do with the abnormal fragility. The hypothetical hemolysis suggested by some investigators has never been demonstrated. An excessive activity of the reticulo-endothelial system has also been assumed. None of these ideas explains the effect of splenectomy.

Noegeli and Gersmolen believe there is a constitutional abnormality of the erythrocytes. The splenomegaly simply represents a work hypertrophy. This theory is perhaps the most tenable.

Splenectomy is indicated in the presence of a progressive anemia of hemolytic origin. As the

hemolysis may appear in crises which are often separated by intervals of several years, it is important to operate while the general condition remains good or at least during a remission. Although the anemia may appear at an early age, it rarely becomes grave before adolescence. Therefore, as the infant is usually weak, the operation may be delayed until puberty. Cholelithiasis rarely develops before puberty. The patient's condition often renders it necessary to limit the operation to ligation of the splenic artery. Preliminary transfusion has given both good and poor results.

The immediate mortality of splenectomy is from 3 to 10 per cent. The clinical effects of the operation are always striking. First to recede is the icterus. Often the attacks of biliary colic cease. The general condition improves rapidly. In young persons there is an increase in the rate of growth which compensates for any previous retardation. The erythrocyte count rises rapidly and may pass the normal. Polycythemia of 3 million have been reported. The hemoglobin is restored more slowly. The reticulocytes disappear within a few months. Jolly bodies may become more numerous. The fragility of the erythrocytes persists, this phenomenon being evidently independent of the spleen. Occasionally there is a return to normal. The blood cholesterol is increased.

The late results of splenectomy are uniformly good, only a few instances of recurrence of the anemia being recorded. The outlook in a given case depends upon whether there are complications such as cirrhosis of the liver and cholelithiasis.

Splenectomy has been attempted in leukæmia and polycythæmia, but today has been universally abandoned in these conditions. In pernicious anemia it has sometimes been beneficial when combined with liver therapy, but its exact place in the treatment of this condition cannot be stated.

ALBERT F. DE OLIVEA, M.D.

Moynihan of Leeds, Lord Removal of the Spleen.
Brit. M. J. 93, 4, 70

The author first reviews a the historical and physiological facts relative to the spleen.

Fifteen cases of rupture of the spleen without injury have been recorded. In nine, recovery followed splenectomy. In cases of trauma to the spleen massive bleeding usually occurs immediately, but in some instances the initial loss of blood is small and severe hemorrhage is delayed. Immediate splenectomy gives good results. In the author's cases the mortality has been 7 per cent.

Mobility, torsion, and prolapse of the spleen are occasionally found, particularly in viscerotaxis. When operation is necessary because of torsion, the procedure of choice is splenectomy. Occasionally splenectomy is warranted in splenomegaly due to chronic malaria or intractable syphilis.

Splenic anemia is a continuously progressive disease associated with splenomegaly, anemia, hemorrhage, ultimate atrophy of the liver and scites.

Unless splenectomy is performed the condition is fatal. In the early stages its recognition is difficult because the clinical signs are few. If surgery is undertaken in the late stages the splenomegaly should first be reduced by roentgen or radium irradiation. Repeated pre-operative transfusions are advisable. The author spends many weeks in preparing his patients for operation and attributes the low mortality in his cases to this pre-operative care. Occasionally splenectomy is successful even when the liver is shrunken and hard, ascites is present, and the outlook is apparently hopeless. The most frequent postoperative complication is hæmorrhage, particularly hæmatemesis.

The gravity of the acquired form of hæmolytic jaundice is dependent upon the extent of secondary changes in the biliary system. Most of the latter are characterized by choledocholithiasis. The stones are usually soft, black, and small, but occasionally a soft mud and pus are present. In the early stages of the disease, periods of sudden marked decrease in the

number of red cells are apt to occur. This crisis is characterized by great malaise, fever, enlargement and tenderness of the spleen, deepening jaundice, and the appearance of a large amount of bile pigment in the urine. However there are no petechiæ and the skin does not itch. In the early stages splenectomy is curative, but when pathological changes in the bile ducts have occurred it is of little benefit. Accessory spleens should be removed as they militate against a successful result.

In chronic purpura, blood platelets are destroyed either by toxins in the circulation or by some abnormal activity on the part of the spleen. The author reports four cases of chronic purpura in which splenectomy was performed with no mortality and one case of acute purpura in which it was soon followed by death. The thrombocyte count is of some value as an index of the value of operation in this condition as the author has found splenectomy of no benefit in cases in which this count was normal.

STANLEY H. MENTZER, M.D.

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MARK T. DE GROOT, M.D.

Morrison of Leeds, Lord: Removal of the Spleen.
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important in order that surgery may be undertaken before the condition becomes inoperable

PETER A. ROSE, M.D.

Wintz, H. Roentgen Therapy of Carcinoma of the Ovary (Die Roentgentherapie des Ovarialcarcinoms) *Strahlentherapie*, 1932, xlv, 201

The author calls attention to the fact that in the treatment of carcinoma of the ovary primary and secondary tumors must be sharply differentiated. He discusses only the latter type. As the diagnosis cannot be made with certainty by ordinary examinations of the patient, exploratory laparotomy must be performed in every case.

There are three possibilities for the extension of the carcinoma: peritoneal dissemination, lymphatic metastasis, and spread by way of the blood stream.

Statistics show that the results of surgical treatment vary considerably. In cases of primary carcinoma of the ovary which is apparently still amenable to radical surgery the incidence of permanent cure is about 25 per cent. In cases of this type which are treated by operation alone it is only about 10 per cent. Accordingly, the attempt has been made to improve the results by irradiation.

As almost one-half of all ovarian carcinomata belong to the class of adenocarcinomata, the irradiation method employed must be based on the dosage required for adenocarcinoma. The first requisite in irradiation is the administration of the required dose throughout the involved area. For adenocarcinoma this dose is 125 per cent of the skin erythema dose. Therefore the entire true pelvis must be irradiated in such a manner that the upper limit corresponds to the level of the umbilicus. However, to subject two-thirds of the abdominal cavity to irradiation with from 125 to 130 per cent of the skin erythema dose is dangerous, the blood-forming centers especially suffer irreparable disturbances and damage. An increase in the dosage above from 110 to 115 per cent of the skin erythema dose is out of the question. Therefore the irradiation must be repeated since a single irradiation has never resulted in cure. The second treatment may be given from six to eight weeks after the first without much danger. Whether a third treatment may be given twelve weeks after the second depends upon the patient's general condition and particularly upon the blood picture.

In some cases of ovarian carcinoma, especially those in which the tumor is predominantly cystic at the time of operation and those in which the carcinomatous degeneration is at a distance from the pedicle, postoperative irradiation may not be necessary. However, when the carcinoma has broken through its capsule, metastases are always present in the peritoneum and under such circumstances postoperative irradiation is important.

As a result of the treatment described, 40 per cent of the author's patients whose condition was believed to be hopeless were alive and well three years after completion of the treatment and 23 per cent were alive and well at the end of five years. The

plan of irradiation is so carefully carried out that it is possible to irradiate the entire pelvis evenly with from 110 to 115 per cent of the skin erythema dose. Unless the patient's general condition demands it, the distribution of the irradiation dosage is not extended over a period of more than three days. An irradiation régime of this type is not suitable for ambulatory patients. SCHROEDER (G)

Holden, F. C., and Sovak, F. W. Reconstruction of the Oviducts. An Improved Technique, with a Report of Cases. *Am J Obst & Gynec*, 1932, xxv, 684

Oviducts having occlusions in the outer third are reconstructed by performing a "circumcision" operation as suggested by Bonney, everting the tube by bringing back the mucosa to the serosa for a distance of from 1.5 to 2.5 cm., thereby eliminating raw surfaces at the newly constructed ostium and avoiding the adhesions and occlusions which are so prone to follow plastic operations.

Oviducts showing occlusions anywhere in the inner two-thirds are not suitable for the circumcision procedure, but may be subjected to the implantation operation. The latter is performed as follows:

The site of the occlusion is noted by air insufflation and the tube severed proximal to the occluded area until a free passage of the insufflated air is evident. The uterine portion of the occluded tube is then freed as far as the cornu from its attachment to the broad ligament, the cutting being done as close to the tube as possible in order to avoid impairing the ovarian circulation. Bleeding vessels of the broad ligament are clamped and tied with No. 00 plain gut. The uterus is firmly held while a specially constructed reaming instrument is passed over the occluded stump of the tube. The tube and its intramural portion are reamed out by a circular movement of the instrument entering the uterine cavity, the normal position and course of the tube being maintained as nearly as possible. A core consisting of the old occluded stump of the tube and the chronically infected cornual tissue then remains. This is readily removed when the reamer is withdrawn. The new opening into the uterus has a diameter of approximately 0.5 cm. As the circular motion of the instrument crushes rather than cuts the blood vessels, the instrument does not cause any free bleeding such as might be expected in this area. The slight amount of oozing first noted quickly subsides. The patent portion of the tube is also freed from its broad ligament attachment for a distance of about 0.5 cm. and after the bleeding has been controlled is bisected longitudinally with cuticle scissors guided by a probe inserted within its lumen.

A long No. 00 chromic suture is passed through the superior and inferior ends of the bisected tube, and the ends of the suture are clamped for further use. A Reverdin needle is inserted about 1 cm. beyond the center of the fundus posteriorly and passed out through the newly created uterine opening. The ends of the suture previously applied to the superior

GYNECOLOGY

UTERUS

Vlase, O: Uterine Perforations (Perforation of the uterus). *Clin. stud.*, 1932, xiii 634

The author reports three cases of perforation of the uterus. In the first, the perforation occurred during the course of dilatation for therapeutic abortion necessitated by eclampsia. In the second, a perforation of the fundus of the uterus occurred during dilatation for menorrhagia. In the third, the anterior wall of the uterus was perforated in the course of a criminal abortion. Laparotomy was performed in all three cases. In the first case, a subtotal hysterectomy was done; in the second, the perforation was sutured and in the third, hysterectomy and resection of 1.6 meters of involved gut were done.

The most frequent causes of perforation of the uterus are technical errors occurring especially in the course of criminal abortion. In some cases, however softening or scarring of the uterus predispose to perforation during simple operative procedures. These predisposing factors are of medical-legal importance.

The author believes that laparotomy is indicated in all cases. Further measures can be determined only after inspection of the perforation.

PETER A. ROSE, M.D.

Cutler, M: The Treatment of Carcinomas of the Cervix with Small Quantities of Radium. *Surg. Gynec. & Obst.* 1932, lv 48

Cutler discusses the principles underlying the radium treatment of cancer of the cervix and advocates a technique by which small quantities of radium can be used quite effectively. The method is essentially that employed in the Curie Institute.

The French school contends that tumor cells are most vulnerable to irradiation during their stage of division. Consequently, in carcinomas of the cervix, the lesion is irradiated for approximately five days. If the interval of irradiation is prolonged beyond the optimum, the tumor cells pass from their most sensitive phase to a state of relative radioresistance. It is quite generally accepted that prolongation of the time permits normal tissues to withstand much larger doses of irradiation than they are able to withstand with a short intense exposure. Accordingly prolonged irradiation is favored as the most effective method of treatment.

To establish a diagnosis of early cancer of the cervix, the author recommends the removal of a block of tissue measuring 12 by 10 by 4 mm. A piece of such size can be studied histologically in a thoroughly satisfactory manner. Cutler suggests the use of endothermy excision with a rectangular loop

measuring 4 by 12 mm. The excision should be carried to a depth of 1 cm. but can be made deeper if desired.

The indications for treatment according to the clinical stage of the lesions are summarized as follows:

Grade 1. Intra-uterine and vaginal irradiation need not be supplemented by external irradiation.

Grades 2 and 3. Intra-uterine and vaginal irradiation must be supplemented by external irradiation.

Grades 4 and 5. In the more advanced stages of the disease external irradiation should be employed either alone or combined with vaginal irradiation, and uterine irradiation should be omitted or deferred.

If secondary infection is pronounced, it is best to start the treatment with external irradiation irrespective of the extent of local involvement by the neoplasm.

It is probably wisest to regard the entire cervix, paracervical tissues, and parametrium as potentially malignant, and to treat all lesions with maximum doses of irradiation. This is necessary because it is impossible to determine the extent of the disease by bimanual palpation.

The technique of irradiation is as follows:

1. Intra-uterine. Either 30 or 50 mgm. of radium in capsules are placed in the uterus by means of an intra-uterine applicator.

2. Vaginal. The Curie colpostat is used. Each of three corks contains 10 mgm. of radium. The colpostat is held in place by a gauze pack. It is removed daily for cleansing of the vagina, then re-applied and the vagina repacked. Both uterine and vaginal irradiation is continued for five days, a total dose of from 7,000 to 8,000 mgm.-hrs. being administered.

3. External irradiation with the radium pack. Intra-uterine irradiation is followed promptly by external irradiation by means of a 4-gm. pack. Seven portals of entry are used, two anterior, two posterior, two lateral, and one perineal. The treatment is given for two hours daily over a period of about twenty-six days. The radium pack has the advantage of causing practically no irradiation sickness.

GEORGE H. GARDNER, M.D.

ADnexAL AND PERIUTERINE CONDITIONS

Sannikow, G: Diagnostic Errors in Malignant Neoplasms of the Ovary (Errors diagnosed in terms of acropathic maligne deliriosae). *Clin. stud.*, 92 xiii 648.

The author reports four malignant tumors of the ovary which were diagnosed respectively as paratyphoid fever, tuberculous peritonitis, parametritis, and pregnancy. He discusses the frequency of such tumors and emphasizes that early diagnosis is

logical changes an accurate knowledge of normal conditions is essential. The author discusses the latter with the aid of several illustrations and describes especially the so-called transition zone of the portio vaginalis.

In the diagnosis of erosions, the colposcope renders excellent service. It permits a differentiation between benign and malignant erosions. In those which are benign the tendency toward healing is clearly recognizable, being evidenced by a flat surface. In malignant erosions, yellowish-white areas, which are beginning necroses, are seen on the surface. However, histological examination is still essential for the diagnosis of malignancy as only future refinements of the method will permit an absolutely certain diagnosis to be made by means of the colposcope.

Another field for colposcopy is leucoplakia. With the aid of the colposcope, this condition is now recognized much more frequently than formerly. It occurs more often at certain sites than at others, and appears in the form of silver-gray spots. The author discusses three cases in which, on the basis of the colposcopic diagnosis of leucoplakia, an early histological diagnosis of beginning carcinoma was made possible. If, in the future, certain forms of leucoplakia are determined definitely to be precancerous states, colposcopic examination will play an important and decisive rôle in the early diagnosis of genital carcinoma. E GOLDBERGER (G)

Murray, H. L. Genital Prolapse: Diagnosis, Mechanism, and Treatment. *Brit M J*, 1932, II, 744

Attention is called to the fact that the symptoms of many other conditions may be mistaken for those of prolapse. Even in the presence of prolapse such conditions should be suspected. Often a prolapse may be practically or relatively symptomless. The symptoms bear less relation to the degree of the prolapse than to the rate of its development. While the condition is progressive there will be symptoms, but when it is stationary symptoms may be absent.

Prolapse is by no means necessarily preceded by obstetrical trauma or mismanagement. Attention is called to its frequency in nulliparous females. Tearing of the perineum *per se* is of little importance. Some abnormality higher up—a more or less gross injury, subinvolution of structures constituting the pelvic floor, or congenital abnormality—is necessary for prolapse to occur following the average delivery.

Uncomplicated prolapse is absolutely postural. The tendency toward an increase in the symptoms toward evening and particularly following a hard day's work in the erect posture is characteristic. Complicating conditions will not show this tendency.

The symptoms of parous prolapse usually begin soon after, or are dated from, delivery. The condition can be clearly distinguished from the type due to congenital weakness. Symptomatic improvement from the use of a pessary is a valuable criterion with regard to operation.

In discussing the mechanism of prolapse the author maintains that there can be no prolapse if the vagina is maintained as a stem, that is, if the anterior wall lies parallel with the posterior wall. Operation for the correction of prolapse must refashion the vaginal stem until it reverts very nearly to the nulliparous condition. It must be so narrowed that its anterior and posterior walls once more lie together as parallel surfaces, the anterior on the posterior. Retroposition of the uterus is of no importance except insofar as it is complicated by subinvolution. Occasionally this condition may require separate correction. Otherwise, practically all cases of prolapse can be corrected best by restoration of a vaginal stem through the use of colporrhaphies alone.

Colporrhaphies are not contra-indicated in the child-bearing period. Attention must be paid to the danger of causing dyspareunia. The patient's age must be considered, and the most conservative procedure which will be effective should be adopted.

GOODRICH C. SCHAUFFLER, M.D.

Redell, G. A Contribution to the Question of the Results of the Operative Treatment of Genital Prolapse. *Acta obst et gynec Scand*, 1932, XII, 254

By way of introduction the author states that of the 600 cases of genital prolapse which were operated upon in Sweden during the year 1930, about 500 were treated by a plastic operation on the pelvic floor and only 20 by the Schauta-Wertheim-Watkins method.

He then reports the end-results in 127 cases of genital prolapse which were operated upon in the period from 1919 to 1931. Eighty-two of the patients were re-examined.

Ventrofixation of one kind or another was done in 10 cases and was followed by recurrence in 7.

Of 118 cases in which a plastic operation was performed on the pelvic floor, freedom from recurrence was obtained in 93.2 per cent. The operation was usually performed according to the method of Forssner and Ahlström, consisting in anterior and posterior colporrhaphy, perineoplasty with suturing of the levator ani, and, in 73 cases, amputation of the cervix.

Local anesthesia induced with 0.5 per cent novocain was used with very good results. The field of operation was disinfected with tincture of iodine.

There were no deaths during or due to the operation or due to postoperative complications. Complications were very rare.

Ten of the patients went through normal parturition after the operation.

Of the 9 patients who became pregnant after the operation, 6 had been subjected to amputation of the cervix.

The author explains the occurrence of postoperative urinary incontinence in 3 cases by assuming that the anterior colporrhaphy was done too far forward so that it impaired the function of the urethra. In 1 case a vesicovaginal fistula was due to this error.

bisected portion of the tube are then re-inserted into the eye of the needle, the needle is withdrawn, and the sutures are brought out on the posterior surface of the uterus without tension. The same procedure is repeated by passing the Reverdin needle through the anterior surface of the fundus and bringing the suture out on the inferior portion of the bisected tube. The serosal covering of the bisected portion is traumatized, and by gently pulling the anterior and posterior fundal sutures, the tube is gradually drawn into the newly created opening and its ends are drawn into the uterine cavity. The sutures are then anchored on the fundus and two or three fine supporting sutures are passed through the serosa of both tube and uterus. The patency of the newly implanted tube is then tested by the use of the insufflation syringe. The re-implanted tube and ovary are suspended by the Poodle technique and the uterus is suspended by a one-point suspension.

From forty-eight to ninety-six hours after the operation the patient is subjected to a Rubin insufflation test to determine and maintain the patency of the reconstructed tubes. This procedure should not be attempted if any cervical or vaginal plastic operations have been performed or if the patient shows a marked postoperative reaction. Before the patient is discharged from the hospital the test is repeated to insure the patency of the tubes. If the tubes are patent when she is discharged from the hospital she is instructed to return for a follow-up examination at the end of three or four weeks, when the patency is again determined by the Rubin test.

Seven (77.7 per cent) of nine patients operated upon in the manner described had patent tubes after the operation. E. L. CORVEX, M.D.

EXTERNAL GENITALIA

Tausch, M.: A Contribution to the Clinical and Statistical Knowledge of Carcinoma of the Vulva (Beitrag zur Klinik und Statistik des Vulva-carcinoms). *Monatsschr. f. Geburtsh. Gynäk.*, 1933, **xxix**, 402.

The author reviews the clinical results in cases of carcinoma of the vulva admitted to the gynecological clinic of the University of Tübingen in the period from 1907 to July 1930. During that period of time 54 cases of carcinoma of the vulva were found among 32,415 cases of gynecological conditions. The incidence of carcinoma of the vulva to the total number of gynecological cases was therefore 0.7 per cent. The relation of this disease to carcinomas of the uterus was 4.5:100.

In 14.81 per cent of the cases of carcinoma of the vulva a family history of cancer was given. The condition is most frequent in the sixth and seventh decades of life. However, the author reports two cases in which it occurred in women under thirty years old.

Of the 54 carcinoma cases reviewed, 41 were primary, 9 were recurrent, and 4 were secondary. In most of

the cases the clitoris was affected with the labial region. In 30, the regional lymph nodes were enlarged, and in 23 they were involved on both sides. In 10 of the 15 cases in which a histological examination was made the clinical diagnosis of malignancy was confirmed.

Only 24 of the women were treated by operation alone. The radical operation was relatively seldom performed. Eight of the patients were treated by operation and postoperative roentgen irradiation. With regard to the technique of the roentgen irradiation the author states that a full carcinoma dose consisted of 1 skin erythema dose each to an abdominal, back, and vulva field and a lateral field at a skin-focus distance of 30 cm. with a filtration of 0.5 mm. of copper and 1 mm. of aluminum in the vulvar field and of 0.8 mm. of copper and 1 mm. of aluminum in the other fields and a current of 220 kv and 4 ma.

Fifteen of the patients were treated by irradiation exclusively. Of these, 4 were treated by both roentgen and radium irradiation, 9 by roentgen irradiation alone, and 2 by radium irradiation alone. The radium technique consisted in the direct application to the tumor for forty-eight hours of 25 mgm. of radium element filtered with 0.3 mm. of silver and 1 mm. of brass.

Three of the patients were not treated. Of the 47 patients who received treatment, only 8 could be traced longer than five years. The incidence of permanent cure, insofar as one can speak of cure in cases of carcinoma of the vulva after five years, was 16 per cent. However, of the 8 patients traced, 4 died of carcinoma a little the next few years. Five of the 8 were treated by operation alone, 2 were treated by operation and irradiation, and 1 was treated by roentgen irradiation alone. One patient who was operated upon died soon after the operation from a puerile phlegmon of the pelvis.

Of the patients with recurrent carcinoma only 2 could be considered as temporarily cured—one after three quarters of a year and the other after a year and a half.

The incidence of secondary carcinoma of the vulva was 3.7 per cent. In 3 of the 4 cases the primary carcinoma occurred in the corpus of the uterus and in 1 in the vagina. Two of the 4 patients lived longer than five years.

In conclusion the author says that with this report, from which it is impossible to draw definite conclusions because of the small number of the cases, he wishes to present a "small building stone for a large statistic."

WILKS (G).

MISCELLANEOUS

Sakell, J. Colposcopy (Kolposkopie). *Cs. 168. 2nd* 934, p. 815.

The first practical colposcope was devised by Hinselmann. The author has constructed an instrument upon the same principles which magnifies from twelve to twenty times. For the evaluation of patho-

were enucleated because of the severe tension produced and are now being prepared for microscopic examination

5 *Attempts at fertilization of ova which had been produced by artificial stimulation* Sperms were injected into the anterior chamber of the eye with a fine hypodermic needle at periods varying from ten to forty-eight hours after artificial stimulation and coincidental with macroscopic evidence of ovulation in the ovarian transplant. In no case did implantation occur.

With regard to the possibility of using ovarian transplants in the eye in tests for pregnancy, the authors state that they are now trying to simplify the technique of the preparation of the animals so that castration and implantation of tissue into the eye may be done at the same operation. The only risk will be from the injection of toxic urine. They have used eight animals in these tests without failure.

From the results of the experiments reported the following conclusions are drawn:

1 Because of the ease of the transplantation, constant visibility, the fluid-filled space for growth and nourishment, and prompt vascularization, the anterior chamber of the eye is an ideal location for the study of the growth and physiological response of transplanted tissues.

2 It has been proved that endometrial tissue has peculiar properties of proliferation of its epithelium with invasion of adjacent structures forming

gland-like spaces, and that frequently this epithelium undergoes a metaplasia to a type resembling tubal epithelium.

3 Isolated segments of transplanted endometrium retain the property of alternate congestion and blanching which seems to be under the immediate control of ovarian activity.

4 The evident ease with which such a highly specialized tissue as the ovary can be made to live in the anterior chamber of the eye is surprising. Over relatively long periods transplants will remain quiescent or resistant to their usual stimuli if other ovarian tissue is present in its normal location.

5 In some instances at least, the germinal epithelium suggests a power of proliferation. In others, it suggests the ability to initiate new follicular formation. This may be due to a compensatory hypertrophy following castration as indicated by the spontaneous appearance of follicles in transplants previously inactive. More definite evidence of this possibility is suggested by the regular appearance in implants of a sudden sensitivity to ordinary ovarian stimuli following castration.

6 It is necessary to conclude that not all ovarian tissue is simultaneously responsive to known potent stimuli. This may be due to the fact that a portion is in a resistant phase or that new ovules are in the process of formation and growth. These physiological functions are under the control of blood-borne stimuli and are independent of location and nerve supply.

ROBERT M. GRIER, M.D.

Staiano, C.: A Contribution to the Study of a Complex Anorectovaginal Syndrome of Uncertain Etiology (Contribucion al estudio de un complejo sindrome ano-recto-vulvo-vaginal asociado de etiologia imprecisa). *Bolet. Soc. de obst. y ginec. de Buenos Aires* 1932, 24, 455.

Six cases of multiple chronic rectovaginal fistulae are reviewed. The women were between the ages of twenty-two and thirty years. All of them complained of menstrual insufficiency and sterility and in all there was early anatomical involution of the genital organs.

Fistulae of this type show a uniform topography. The superficial ones are perianal and the deep ones are rectovaginal. As a rule the vaginal and rectal tissues are separated from the surrounding structures. The lesions are late sequelae of inflammatory rectal strictures. In all of the cases reviewed a rectal stenosis could be palpated at a distance of about 5 cm. The lesions are thought to be lymphogranulomatous in nature. When once established, they are resistant to all therapeutic measures except radical surgery. WILLIAM H. MARRAS, M.D.

Adams-Ray, J.: On Extragenital and Intra-genital Endometriosis and Its Surgical Importance. *Arch. Surg.* 1932, 102, 167.

The author discusses extragenital and inguinal endometriosis on the basis of the cases of twenty-one women between the ages of twenty-four and forty-nine years. In 57 per cent of these cases there were cyclic symptoms which included bleeding, the secretion of a tar-like fluid, pain, tenderness, and swelling of the tumor. In the cases of intestinal endometriosis there was increased distress due to stenosis during the menstrual periods.

Allen, M., and Priest, F. O.: Physiological Responses of Ectopic Ovarian and Endometrial Tissues. *Surg. Gynec. & Obst.*, 1931, 551.

In previous studies on the comparative growth of various pelvic tissues transplanted into the anterior chamber of the eye the authors were impressed by the possibilities offered for a study of function by direct observation. Accordingly they carried out a series of experiments on rabbits in which they studied the physiological responses of ectopic ovaries and endometrial tissue by the following procedures:

1a. *Recovery of normally impregnated ova from the uterus with attempted implantation into the abdominal cavity.* In the cases of twenty-eight rabbits laparotomy was performed from seventy-two to one hundred and forty hours after observed coitus, the ovaries were inspected for signs of recent ovulation, one ovary, both tubes, and the entire uterus were removed, and various transplants were made into the eye. In the cases of 17 of the animals the ova were washed from the uterus with warm normal saline or Locke's solution into a sterile watch glass, identified, and returned to the abdominal cavity. In the remainder the ova were washed back into the abdominal

cavity directly from the uterus. Some of these eggs were saved for section and were shown to have been fertilized as they were in the process of division. The number of eggs varied from one to nine. Subsequent operation or necropsy revealed no evidence of implantation of the ova which had been washed back into the abdominal cavity.

1b. *Transplantation of this active ovarian tissue to the anterior chamber of the eye.* A small piece of endometrium was transplanted into the left eye and a thin section of ovary into both eyes through an incision at the limbus. The other ovary was left undisturbed in the abdomen. In none of these eyes, which were observed for from three days to as long as seven months, was ovulation noted.

2. *Transplantation of normally fertilized ova to the anterior chamber of the eye.* In the cases of three animals attempts were made to transplant normally fertilized ova recovered from the uterine washings to an endometrial bed in the eye. The attempts to obtain implantation were unsuccessful.

3. *Physiological and artificial stimulation of ovaries.* From two weeks to four months after the preparatory operation, ten rabbits were again allowed to copulate. No evidence of ovulation in the eye was noted. Later the same rabbits were given urine of pregnant rabbits according to the technique of the routine Friedman test. The abdominal ovary gave positive results in every instance, but no evidence of ovulation was noted in the transplanted ovarian tissue.

4. *Direct observation of the effects of hormones.* The results thus far had suggested that the ovarian transplants were inactive and therefore unresponsive to stimuli of proved potency. The endometrial transplants in the eye continued to show the typical bluish and blanch phenomena which were described by Clarke and which Clarke held will disappear between from thirty to sixty days after castration. It was not synchronous in multiple implants in the same eye or in opposite eyes. As castration seemed a logical measure to prove the viability of the transplanted ovarian tissue, the remaining ovary was removed and observations were begun on the cyclic phenomena of the transplanted endometrium. As in most instances the endometrial phenomena continued, it was necessary to conclude that the ovarian transplants were active or that the congestion and blanching were under other control. In those, two of the animals showed spontaneous activity in the ovarian transplant, but the process was slow and not pronounced. After artificial stimulation with hormone concentrates or urine from pregnant rabbits the results were startling. Within from thirty to forty-eight hours after the injection, gross evidence of violent ovarian changes were seen. The ovarian transplants increased from five to ten times in size and their margins became studded with many large follicles. After from three to five days there was definite evidence of degenerating corpora lutea. Synchronously the endometrial transplant showed greatly increased activity. The eyes of these rabbits

cases liver therapy had not yet been employed, and in the other case no time for its application remained after the patient came under observation.

With the proper therapy and timely diagnosis of this disease, the prognosis is good. In view of the therapeutic successes, the author does not consider the interruption of labor justifiable, but advocates timely and consistent treatment with liver preparations of iron and arsenic, and in case of necessity, blood transfusions. E GOLDBERGER (G)

Anderson, D F. Gastric Acidity in Emesis and Hyperemesis Gravidarum. *J Obst & Gynec Brit Emp*, 1932, XXXIX, 558

In studies of intake and output in cases of pregnancy associated with vomiting it was found that in most cases of hyperemesis gravidarum the vomitus collected over a period of twenty-four hours contained no free hydrochloric acid and in the remainder its concentration of acid was very low. Hence it appears that little or no acid is lost from the body and there is little basis for the assumption of a relative alkalosis.

The authors next made an investigation of the gastric acidity by fractional test meals. Previous or existing gastric troubles and urinary infections were carefully ruled out. Of twenty-one women suffering from more or less severe vomiting, fifteen had achlorhydria. Of the latter, thirteen belonged to the group with hyperemesis gravidarum and two had pyelitis. In the six others, only slight traces of free hydrochloric acid were found in the vomitus. That the achlorhydria was not due to the regurgitation of alkaline duodenal contents into the stomach seemed evident from the absence of bile in the vomitus.

In addition to the routine management of these cases the patients were given dilute hydrochloric acid three times daily with apparent benefit.

HARRY W FINE, M D

Seltz, L. Present-Day Theories Regarding the Toxicoses of Pregnancy (Der gegenwaertige Stand der Lehre von den Schwangerschaftstoxikosen). *Klin Wchschr*, 1932, I, 881

The author discusses the physiological changes brought about by pregnancy. The cause of these changes lies in the chemical and physicochemical changes in the organism, in the metabolism as well as in the chemical composition of the blood and body fluids. The glands of internal secretion suffer marked changes as the introduction of a new and specific endocrine organ, the placenta, into the glandular chain leads to a disturbance of the equilibrium of the ductless glands.

The author discusses briefly the morphological and functional changes taking place in the ovary, the anterior lobe of the hypophysis, the thyroid, the parathyroids, and the adrenals, and emphasizes that we still do not know how these morphological and functional alterations of the endocrine glands affect the female organism biologically and clinically. Metabolic studies made during pregnancy show

definitely an increase in the amount of highly molecular end-products of protein metabolism. There is a decrease in the ability to burn fat which leads to an increased formation of ketone bodies. Gross disturbances of carbohydrate metabolism are not demonstrable. The growing fetus exerts an especially marked effect upon the mineral metabolism. The reaction of the blood is unusually labile.

Important changes during pregnancy, such as those occurring in the vascular system and the changed reaction of the sympathetic nervous system, the two chief mediators between cells and organs are secondary. In the female the vasomotor apparatus is in itself more sensitive and labile than in the male. It is understandable that this greater excitability is still further increased during pregnancy and not infrequently causes disturbances. A physiological condition may quite insidiously become a pathological condition. A prerequisite for the increased demands made upon the organism during pregnancy is sufficient adaptability of organs and systems of organs. Constitutional inferiority may result in failure of the organism to develop a state of equilibrium. The result of such failure is the development of toxicoses. The liver and kidneys are the organs most frequently burdened by pregnancy. Accordingly they are most frequently the sites of functional disturbances which may progress to complete loss of function. It is emphasized that these are purely secondary symptoms which may appear just as suddenly as they later disappear. The rapid regression of all clinical symptoms and pathologico-anatomical changes after the interruption of pregnancy or after parturition is an important characteristic of toxicoses. Various phases of these toxicoses, despite an identical clinical course, differ decidedly in their nature and findings. In this connection the author cites the cerebral eclampsia which he calls "Labilitaetsklampsie" in contradistinction to eclampsia of hepatic origin. The nephrogenous type of eclampsia is the most common form.

The toxicoses of pregnancy are essentially nothing else than a more or less unsuccessful adaptation to pregnancy, which in the final analysis is due to endocrine disturbances brought about by toxic factors. Whether a polyhormonal disturbance or a disturbance of a single gland such as the posterior lobe of the hypophysis or the thyroid is chiefly responsible has not as yet been definitely determined.

In conclusion the author discusses treatment and emphasizes that diet is of great importance for prophylaxis as well as therapy, although it is impossible to prevent the development of pregnancy toxicoses with certainty in every case. KESSLER (G)

Polák, E - A Contribution to the Treatment of Perforating Appendicitis During Pregnancy (Ein Beitrag zur Therapie der perforierten Appendicitis waehrend der Schwangerschaft). *Zentralbl f Gynaec*, 1932, p 179

Polák reports two cases of perforating appendicitis during pregnancy.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Pill, G.: The Manóvlov Pregnancy Reaction (Die Manóvlovische Schwangerschaftsreaktion) *Orsini* *berlin* 932 337

The author has tried the Manóvlov test for pregnancy in 150 cases. The technical details were carried out exactly according to the instructions. The following conclusions are drawn:

The test is not sufficiently reliable for the early diagnosis of pregnancy as a positive result was obtained in only 21 per cent of the cases. For purposes of differential diagnosis the reaction is useless as positive results were obtained in a large number of cases of inflammatory disease, tuberculosis, tumors, and nephritis. When pregnancy is advanced the test is nearly always positive, but from a practical standpoint it is then of no value as in advanced pregnancy there are many sure signs of the condition. The simplicity of the test is in its favor.

If by some modification, the reliability of the test in the early months of pregnancy could be improved, the procedure would be a very valuable diagnostic aid. At present, however its reliability cannot be compared with that of the Aschheim-Zondek test.

E. GOLD, M.D. (G)

Motta, G.: Problems Connected with Pregnancy in an Atretic Rudimentary Uterine Horn with Reference to the Roentgenological Diagnosis (Su alcuni problemi legati alle gravidanze in corni atretici rudimentari) *Arch. d. anat. e grav.* 23A *xxix*, 415.

The author reports a case of advanced pregnancy in an accessory uterine horn with retention of a greatly macerated fetus, in which the clinical and roentgenological diagnoses were confirmed by operation. The genital condition in this case apparently falls into the group of asymmetrical aplasia due to incomplete fusion and unequal distribution of the müllerian ducts.

As the fallopian tube on the atrophied side is not patent, the fertilization of the ovum in such a case probably takes place in the peritoneal cavity from sperm entering through the other fallopian tube. The mucosa of the rudimentary structures is probably capable of developing only an imperfect decidua. The rupture of the ectopic pregnancy is probably due to the combination of a dynamic factor and the poor decidua which is impotent as a protective layer against the erosion of the chorionic villi.

The best aid in the diagnosis is X-ray examination with the intra-uterine injection of bismuth which shows the size and shape of the uterine cavity and the patency of the tubes. In a case of the type

reported only one tube is patent, the uterine cavity has an abnormal shape with only one angle, and there is a pointed lateral flexion of the uterus which is characteristic of double uterus. It would be difficult for other tumors to bring about this combination of findings by pressure alone.

A. LOEW ROSE, M.D.

Barlen, J.: The Pathology and Therapy of the Anemia of Pregnancy (Pathologie und Therapie der Graviditätsanämie) *Orsini* *berlin*, 1923, pp 365 393, 412.

The pernicious anemia of pregnancy or hemopathia gravidarum is a severe anemia which is closely related to the pregnancy but nevertheless is to be considered a toxicosis of pregnancy. Frequently the morphological blood picture resembles that of the essential anemia of Biermer. In other cases it resembles more that of chlorosis. Accordingly there are 2 types to be differentiated.

(1) the hyperchromic type, with a color index greater than 1 which resembles the color index of Biermer's anemia and (2) the hypochromic type with a remarkably small color index, which resembles chlorosis. An intense oligocythemia, a diminution in the hemoglobin and the appearance of young elements and evidences of degeneration occur in both groups. They differ from Biermer's anemia in the following manner:

The bilirubin content of the serum is normal or only moderately elevated.

1. Urobilinogen is absent in the urine.

2. The gastric secretion is normal, hypo-acidic is rare and can disappear.

3. After the termination of pregnancy and the puerperium, the disease can end in permanent recovery.

4. After the pregnancy there is no recurrence. During the pregnancy relapses are rare, but may end fatally.

In the treatment it is of the utmost importance that such improvement of the condition be reached during pregnancy with stomach and liver preparations that completion of the pregnancy is made possible.

The author compares the results of treatment before and after the discovery of liver therapy. Formerly with iron and arsenic therapy and injections of transfusions of blood, 6 per cent of the patients were cured and 39 per cent died. In a series of forty-four cases it was possible to increase the number of cures to 84 per cent and to decrease the mortality to 15 per cent by the use of liver therapy.

The author reports five cases which he has observed during the past four years: three ended in cure and two terminated fatally. In one of the latter

cases liver therapy had not yet been employed, and in the other case no time for its application remained after the patient came under observation.

With the proper therapy and timely diagnosis of this disease, the prognosis is good. In view of the therapeutic successes, the author does not consider the interruption of labor justifiable, but advocates timely and consistent treatment with liver preparations of iron and arsenic, and in case of necessity, blood transfusions. E GOLDBERGER (G)

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HARRY W. FINE, M.D.

Seitz, L. Present-Day Theories Regarding the Toxemias of Pregnancy (Der gegenwärtige Stand der Lehre von den Schwangerschaftstoxikosen). *Klin. Wchnschr.*, 1932, 1, 881

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The toxemias of pregnancy are essentially nothing else than a more or less unsuccessful adaptation to pregnancy, which in the final analysis is due to endocrine disturbances brought about by toxic factors. Whether a polyhormonal disturbance or a disturbance of a single gland such as the posterior lobe of the hypophysis or the thyroid is chiefly responsible has not as yet been definitely determined.

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Polák reports two cases of perforating appendicitis during pregnancy.

In the first case, that of a para-II thirty-three years of age, the first attack of appendicitis had occurred six years previously. In the seventh month of her third pregnancy the patient was suddenly seized with another attack and entered the hospital twenty-eight hours after it began. Following the application of an ice pack and the institution of a dietary régime the symptoms ceased, but four days later the signs of peritonitis developed. Laparotomy with a high lateral gridiron incision evacuated a thick, foul-smelling pus. Appendectomy was done without disturbing the uterus. The tip of the appendix was gangrenous and showed multiple perforations. The first week of convalescence was stormy but the patient gradually recovered without any disturbance of the gestation and was delivered normally at term.

In the second case, that of a para-II twenty-four years of age, the patient entered the hospital shortly before delivery with diffuse peritonitis on the third day of an attack of appendicitis. Operation was done immediately. The following night a full-term child was delivered in a state of asphyxia and could not be resuscitated. The mother was discharged in good condition four weeks later.

The author believes that the treatment of perforating appendicitis in pregnancy should usually consist in primary appendectomy and expectant treatment of the pregnancy. Termination of labor by vaginal cesarean section or some other operative obstetrical procedure is indicated if labor begins and progresses slowly after the appendectomy. If fetal death has occurred, or if appendectomy is technically impossible because of the gravid uterus. If the latter fact is recognized beforehand, evacuation of the uterus may precede appendectomy. If it is determined only during the course of laparotomy the following three-stage procedure is indicated: laparotomy with provisional closure of the abdomen, evacuation of the uterus, ultimate correction of the abdominal condition. Amputation of the gravid uterus at the time of appendectomy is to be considered only occasionally when the uterus is markedly involved in the peritonitis. Proper postoperative management is of the utmost importance. It should include the administration of medication to improve the circulation, glucose, insulin, bacillus coli and peritonitis serum, and papaverin or pentonin instead of morphine to quiet the uterine contractions. Properly timed operation is the most important factor decreasing the mortality.

H. H. SCHEM (G)

Marchesi, F.: A Histopathological Comparison of the Kidneys of Pregnant and Non-Pregnant Rabbits After the Administration of Uranium Nitrate (Confronto istopatologico fra i reni di conigli gravide e non gra ide trattati con nitrato d'uranio). *Riv. Ital. di fisiol.*, 1934, xvi, 375.

To study the effect of toxic substances on the kidneys, Marchesi selected uranium nitrate which seems to act upon the kidneys exclusively. He hoped by its use to obtain data on the toxemics of

pregnancy which cause injury of the kidneys. To non-pregnant rabbits and rabbits at different stages of pregnancy he administered a 1 per cent solution of uranium nitrate in doses of 1 c.cm. per kilogram of body weight. The various animals received from two to sixteen doses subcutaneously on alternate days.

On histological study Marchesi found that the damage sustained by the kidneys was greater in the pregnant rabbits than in the non-pregnant rabbits which had received an equal number of injections. In the cases of all of the pregnant rabbits the uranium nitrate caused abortion, and in the case of one of them it caused death. The lesion produced was almost exclusively a degenerative lesion of the convoluted tubules and Henle's loops. Some of the changes are shown by photomicrographs. No noteworthy damage was sustained by the glomeruli or the interstitial tissue.

The author concludes that during pregnancy the kidneys are not in a state of anatomical integrity.

EDWARD T. LAROV M.D.

LABOR AND ITS COMPLICATIONS

Corywiles, A.: The Birth Mechanism (Der Geburtsmechanismus). *Gesundheitsw.*, 1934, vi, 189.

The author broadens the definition of the mechanism of labor to include not only the passage of the fetus through the birth canal but also all of the changes occurring in the genital organs during pregnancy and labor—the preparation of the birth passages and the expulsion of the fetus. In addition, a part may be played by the abdominal pressure, the contractions of the muscles of the vagina and the pelvic diaphragm, and, occasionally the force of gravity in precipitate labors.

In describing the uterine musculature and its layers the author calls attention to the muscle bundles discovered by him several years ago which, without interruption, unite the chief mass of the uterine muscle with the sphincter of the uterine orifice. He cites also certain details of his new observations concerning the origin of the muscle bundles of the outermost layer of the uterus. He describes in general the changes in localization at the beginning and end of pregnancy. These changes consist of an upward displacement occurring simultaneously with the formation of the lower uterine segment.

A consideration of the effect of the contraction of the uterine muscle leads to the conclusion that in the first half of pregnancy as a result of these contractions, a force arises which exerts a uniform pressure upon the ovum from all sides. In the second half and especially at the end of pregnancy and during labor this contraction acts chiefly as an expelling force from the fundus toward the cervix. On the basis of careful anatomical observations, it may be assumed that this action must first fix the falxura by maximal stretching of the elastic elements (muscles and ligaments) and that only

then can it act as an expelling force. The muscle bundles extending toward the fundus stretch first and after the fixation of these bundles the expulsion of the ovum takes place.

It is therefore evident that these two forces work against each other. The expansion of the ovum acts as an eccentric force, whereas the pains, acting equally from all sides, constitute a concentric force.

The author describes the mechanism of labor in detail and divides it into the following stages

1 The first half of pregnancy. The chief changes consist in a hyperplasia and a new formation of muscles which proceed more rapidly than the ovum can grow. As a result, the ovum is able to develop itself without any hindrance. Nevertheless, in many pathological cases serious complications may arise in this process. A more rapid growth of the ovum (hydramnion) exerts a dilating force which results in enlargement of the uterus without, however, changing its spherical shape. It is probably to this abnormal dilatation that death of the fetus or the beginning of labor is due. The unexpected increase in the force of the pains, which continue throughout pregnancy as weak pains, exerts a concentric pressure upon the ovum and causes opening of the sphincters due to the action of the muscle bundles which directly unite the orifices with the muscle mass of the fundus. The author calls this widening of the uterine os which occurs without any pressure an "active widening." This type, which occurs chiefly in the external uterine os, is evident especially in cases of miscarriage and in deliveries occurring at the end of the period of labor pains. In miscarriages it is very well seen after the discharge of the amniotic fluid and after the expulsion of the fetus.

The uterine contractions during a miscarriage have no expulsive power in the true sense, but force the embryo out because of the diminished resistance of the internal uterine os.

The mechanism of miscarriage depends upon a hydrostatic action of the presenting pole of the ovum. It is different in principle from the mechanism of labor, as is evident from the fact that the portio is not effaced. Effacement is typical of labor. In abortion the placenta is not expelled until some time after the birth of the fetus because it has undergone degenerative processes. Therefore its expulsion may be considered the third stage of labor.

2 The second half of pregnancy. Characteristic of this period is more rapid growth of the ovum. This results in dilatation of the uterus and thinning out of its wall. The change occurs at the weakest point, i.e., between the internal os, which is reinforced by a sphincter, and the outer muscle layer. Anteriorly, this boundary is at the level of the insertion of the round ligament, and posteriorly at that of the uterosacral ligament. Therefore the fundus rises in the form of a dome and the entire uterus assumes the shape of an egg. The lower bundles of the middle muscle layer lengthen themselves. At

the same time the muscles increase in size still more and since they are more numerous in the upper part, there occurs, so to speak, a displacement of the muscles toward the fundus and the upper part of the uterus. All of these are preparatory changes brought about by the elasticity of the ovum. The remainder of the work is borne by the pains of pregnancy. Under their influence the muscles in the uterine wall itself displace themselves upward. The displacement results in a progressive thickening of the fundus muscles and a thinning out and weakening of the lower parts. This is the beginning of the development of the lower uterine segment which, under the action of the pains, becomes larger.

The anterior wall of the lower uterine segment swells more than the posterior wall, which meets with an opposing force in the sacrum. The pulling force upon the posterior wall causes a displacement of the external uterine os posteriorly. The anterior wall swells in the form of a balloon and enters the true pelvis without altering the portio vaginalis.

3 The first stage of labor. This is a continuation of the changes occurring in pregnancy, which, because of strong pains, proceeds more rapidly. As a result the definitive development of the lower uterine segment rapidly begins and ceases at the end of the first stage of labor. In this manner arises the great difference between the contracting forces of the muscles between the fundus and the body of the uterus on the one hand and the lower uterine segment and the neck of the uterus on the other. Thus the contracting force of the uterus has changed itself into an expelling force. This depends entirely upon the lower uterine segment, without which neither an expelling force nor labor can occur.

In cases of premature labor the lower uterine segment has not reached its full development. This must be brought about by labor pains. Therefore the first stage of labor is prolonged.

The external uterine os opens during the first part of labor simply by the protrusion of the anterior lip of the uterine os. The posterior lip has long since been effaced.

4 The second stage of labor. In this stage the membranes rupture under the hydrostatic pressure of the amniotic fluid and the descent of the fetal head.

5 The third stage of labor. This stage needs no explanation so far as the mechanism of labor is concerned.

During pregnancy the chief issue lies in the conversion of the contracting force into an expelling force, whereas during labor it is the accommodation of the advancing head. The accommodation comes about through the molding of the fetal head into the form of a cylinder which accommodates itself to the axis of the true pelvis. The basis of this accommodation is the fact that the fetal brain is a half liquid incompressible mass governed by hydrostatic laws. However, accommodation is possible only when the advancing head can press itself against the linea innominata of the pelvic entrance.

The pressure of the head against the innominate line is not brought about by the descent of the head although there is no doubt that the head is independent in comparison with the trunk. Under the influence of the expelling force the entire contents of the amniotic sac, including the head, descend lower. The head comes into intimate contact with the lines innominate. From this moment, the anterior part of the amniotic fluid is separated from the posterior part and the expelling force can act directly upon the base of the skull. This force acts upon the fetal neck through the body chiefly the spine. In this way is produced pressure along the spine (fetal axis pressure) a pressure which is the resultant of the "general contents pressure."

This pressure is transmitted to the fetal head according to hydrostatic laws. The forces acting upward and toward the sides which go to make it up do not become effective as they are absorbed by the wall. The downward pressure force, since it meets no opposition, drives the preceding head surface downward. The lateral parts of the head follow the preceding part. In this manner the head is molded to the shape of an elongated cylinder. It adapts itself.

The rotations of the head during expulsion need no further explanation. No doubt a force exists which, as described, exerts its pressure through the medium of the spine. The theory of Fritsch convincingly explains the first rotation of the head (flexion). For the second and third turnings the simple and clear explanation of Stumpf, which is based on the resistance of the soft parts and the laws of mechanics, is sufficient. The fourth rotation of the head is generally believed to be brought about by the passage of the shoulder girdle.

The article includes 12 schematic illustrations.

KOWALEKI (G)

Walther, M., and Frey, E.: The Modern Expectant Management of Labor and the Importance of the Number of Pains as a Basis for Its Termination. (Die neuzeitliche expectative Geburtshilfe und die Bedeutung der Wehenscheidung als Grundlage für ihre Begrenzung.) *Menschen / Geburtsh.* n. Gynaeol. 1924 vol. 1, 157.

The important factors in the functional progress of labor are to be sought, not in the duration of the labor but in the condition of the fetal heart sounds and the number of pains occurring after rupture of the membranes.

By an analysis of 3,000 labor charts Frey attempted to answer the following question: Up to what number of labor pains after rupture of the membranes is spontaneous termination of the period of dilatation and expulsion still possible without harm to the mother and child? He made separate studies of labor in cases of normal and contracted pelvis, in primipara and multipara, and with and without premature rupture of the membranes.

From the findings the authors conclude that when the membranes are not ruptured there is little

clinical differences between cases with a large number and cases with a small number of pains, but when the membranes have ruptured the period of dilatation and expulsion must come to an end after a relatively small number of labor pains if spontaneous delivery is to occur without injury to the mother and child.

The maximum numbers of labor pains under various conditions are given in tables.

P. KLEY (U)

Frey, E., and Ruestenacht, H.: The Maximum Number of Pains in Spontaneous Labor of Primiparae with Contracted Pelvis and Premature Rupture of the Membranes. A Contribution on the Expectant Management of Labor and Its Limits. (Die Höchstwehenszahl der Spontangeburt bei Erstgebärenden mit engem Becken und vorzeitigem Rissprung. Ein Beitrag zur expectativen Geburtshilfe und deren Begrenzung.) *Zentralblatt f. Geburtsh. u. Gynaeol.* 1924, 574.

This article is a continuation of previous researches on spontaneous labor in 135 primiparae with contracted pelvis and premature rupture of the membranes. In these cases the painless latent period after the premature rupture of the membranes continued for an average of fourteen hours. In the case of women with a normal pelvis it continued for fifteen and three-quarters hours. The same conditions, a shorter painless latent period in cases of contracted pelvis than in cases of normal pelvis, are found in multiparae with premature rupture of the membranes. Even with a very long painless period (once twelve and one-quarter days) no delay of dilatation or expulsion, or of the placental period could be observed. The blood loss in the placental period, the condition of the children after birth, and the course of the puerperium were never unfavorably influenced. Therefore by aseptic management of the latent period, rest in bed, and abstinence from vaginal examination, the necessity of inducing labor because of premature rupture of the membranes is removed.

In 86 per cent of the 38 labors the period of dilatation was ended after a maximum of 500 pains. In 20 cases more pains (up to 350) were necessary. In the latter manual stretching and, in some instances, laceration of the uterine os, were resorted to on account of rigidity. Spontaneous labor then occurred. The average number of pains in the period of dilatation in primiparae after premature rupture of the membranes is greater (18 pains) in cases of contracted pelvis than in cases of normal pelvis (13 pains).

The authors conclude that the difficulties due to the lack of space in the contracted pelvis are not overcome by an increase in the power of the pains, but by a decrease in the number of the pains. This also applies to the period of expulsion. In the latter period the average number of pains in cases of contracted pelvis is 32 and in cases of normal pelvis, 19. In the cases reviewed the average maximum number

of pains, for expulsion was 75. In 7 per cent a greater number of pains, up to 100, was required. Some of these were cases with deep transverse position of the fetus, whereas others were cases of funnel-shaped pelvis. The authors report also 6 other cases in which the stated average maximum number of pains was exceeded. None of these labors ended spontaneously. Two of the children died. The authors therefore suggest that in the cases of primiparae with contracted pelvis and premature rupture of the membranes the expulsion can be handled expectantly up to a maximum of 75 pains, and with deep transverse position of the fetus and in funnel-shaped pelvis, up to 100 pains. When these numbers are exceeded, operative procedures must be instituted.

For the entire labor after premature rupture of the membranes an average total number of 150 pains in cases of contracted pelvis and 91 pains in cases of normal pelvis was counted. None of the 138 labors studied lasted longer than the maximum of 300 pains. The third stage of labor (placental period) in these cases showed no variation from the third stage in cases of normal pelvis so far as the duration, the amount of blood loss, the nature of the expulsion, and atonic secondary hemorrhage are concerned. The awaiting of the maximum number of pains also caused no disturbance of this period. The fetal mortality was 3.6 per cent. In 11 of the 138 cases there was a breech presentation and in 3 of these the child was born dead. Therefore in cases of contracted pelvis prophylactic version is contra-indicated. The awaiting of the maximum number of pains did not increase the incidence of asphyxia or stillbirths. A study of the course of the puerperium following these labors showed no increase of fever corresponding to the increase of pains. Also, it was of no consequence in the puerperium whether the pelvis was contracted or normal. Therefore in cases of contracted pelvis of the first grade it is to the interest of both the mother and child that expectant management of labor be recommended. Cases of contracted pelvis with a conjugata vera of less than 7.5 cm were treated by cesarean section as a matter of principle. Strict abstinence from vaginal examination during the last four weeks before delivery, and especially rest in bed and asepsis during the painless latent period after premature rupture of the membranes greatly influenced the course of the puerperium. The number of pains and the exact indications derived therefrom were compared with Kruckenberg's formula. The latter proved to be misleading in a large percentage of the labors studied and was rejected.

SCHWALM (G)

Šebek, V. Ventrofixation of the Uterus as an Obstacle to Delivery (Ventrofixation der Gebärmutter als Geburtshindernis). *Ro hl chir a gynaek*, 1932, 11, 30.

In the case reported, that of a para-11 thirty-six years old, ventrofixation of the uterus by laparotomy had been performed by a renowned surgeon seven years previously for prolapse of the uterus and

vagina. A vaginal plastic was not done. The laparotomy incision healed by secondary intention. When the patient was seen by the author she had a cystocele and a rectocele, both the size of a hen's egg. The portio vaginalis, which was far back and above the promontory, could hardly be reached with the bullet forceps and could not be drawn forward. The posterior vault of the vagina was tightly stretched and drawn up, and the cervix was flexed forward at an acute angle. The fetus was in transverse position. In spite of good labor pains, the cervix remained closed. Because of the unfavorable anatomical relationships vaginal cesarean section seemed impossible. The classical section was therefore performed.

When the abdomen was opened the body of the uterus was seen to be firmly bound to the anterior wall of the abdomen by a cicatrix 2 cm wide. This was separated cautiously, but only after the separation of numerous superficial adhesions in the vesico-uterine space was it possible to free the uterus. The typical classical section was carried out with tubal sterilization and peritonization. The puerperium was complicated by bronchopneumonia.

On the basis of this case and numerous similar cases reported in the literature the author emphasizes the importance of great care in the operative correction of displacements, not only in the choice but also in the technique of the method. Ventrofixation and vaginal fixation may be performed only after the menopause. If they are done before the menopause they should be followed by sterilization. For women of the child-bearing age the various types of suspension with the aid of the round ligament and the Alexander-Adams operation are to be recommended. When pregnancy follows a firm uterine fixation, the woman should be kept under constant observation and should wear an abdominal binder to correct the increased anteversion as much as possible.

GOLDBERGER (G)

Michon, L. A Point of Technique in Low Cesarean Section. The Systematic Use of a Peritoneal Flap to Exclude the Operative Zone (Sur un point de technique de la césarienne basse. De l'utilisation systématique d'un lambeau péritonéal pour réaliser l'exclusion de la zone opératoire). *Gynec et obst*, 1932, xxvi, 505.

In order to decrease the maternal mortality of the low cesarean section, the surgeon must endeavor to operate outside of the peritoneum or at least to reduce the peritoneal stage to the minimum.

Michon first makes a 15-cm subumbilical median incision, incises the vesico-uterine peritoneum, and cuts the peritoneal flap. He then makes a transverse incision and detaches the flap with his index finger which at the same time lyses and pads it with cellular tissue. The flap is split in the middle and the forceps are used to turn it back over the edge of the wound. In this way the large peritoneal cavity is excluded.

The only complication observed by Michon was the appearance, in two cases, of a painful sub-

peritoneal hematomas in the iliac fossa on one side of the uterus which was accompanied by a rise in the temperature. This complication may be avoided by care in the use of the instruments and in the separation of the flap. The transverse incision gives a larger flap and a larger field than the longitudinal incision.

Alkison claims that this method of exclusion is quicker and more dependable than methods in which sutures are employed. PAGE.

PUERPERIUM AND ITS COMPLICATIONS

Aisacconi, E.: A Clinical Contribution to the Study of Puerperal Infection from Influenza. (Contributo clinico allo studio della infezione puerperale da influenza.) *Riv. Ital. di ginec.*, 93, xiv, 1917.

The author reviews the literature on the effect of influenza on pregnancy, labor, the puerperium, and the newborn child and reports seven cases.

The epidemic form of influenza exerts a typical effect on all of the stages of pregnancy, labor, and the puerperium. It shortens the stages of labor and causes a typical puerperal infection which develops at the end of the first week of the puerperium. The local evidences of such an infection are pain and incomplete involution of the uterus, an increase in the amount and duration of the lochial flow and a decrease in the production of milk. The isolation of the diplostreptococcus brevis from the blood stream, the endometrium, and the bloody lochia suggested that the local infection is secondary.

In all of the cases reported by the author recovery resulted as the epidemic was apparently a mild one. However it is important to isolate all women who have shown symptoms of such an attack as the condition is contagious. There should be no change in the usual obstetrical procedures. In the cases reported, lacerations of the perineum healed normally.

When the mother was in the active stages of the infection the newborn child was also attacked.

A. LOUIS ROSE, M.D.

Kruter, E., and Ratzlows, S.: On the Question of the Anatomicopathological Changes in Septic Diseases Following Labors and Abortions. (Zur Frage der anatomicopathologischen Veranderungen bei septischen Erkrankungen nach Geburten und Aborten.) *Glasn.*, 93, xi, 1.

The authors review 783 cases of sepsis following delivery and 191 cases following abortion which came to autopsy. A tabulation of the causes of infection in septicemia, septicopyemia, and diffuse general peritonitis shows that the most common infections were the mixed infections, which occurred in 565 cases, and the next most common were streptococcal infections, which occurred in 339 cases. Deeply penetrating inflammatory changes in the myometrium were found in 9 per cent of the cases. In only 45 cases was the uterus completely intact. In 30 per cent the tubes showed inflammatory

changes, and in most of these a pyosalpinx was present. Inflammation was found in the ovaries in 71.5 per cent of the cases, and parametritis in 15 per cent, the latter especially in septicopyemia. The high incidence of parametrial affections speaks against the theory that localization in the parametrium is to be considered evidence of a favorable prognosis.

Thrombophlebitis occurred in 413 (42.24 per cent) of the cases. It occurred in the small parametrial veins 104 times, in the pampiniform plexus 15 times, in the uterine veins 5 times, in the vaginal veins twice, in the hypogastric vein twice, in the inferior vena cava twice, in the femoral vein 8 times, in the right ovarian vein 45 times, in the left ovarian vein twice, and in both right and left ovarian veins 10 times. Combined thromboses occurred 177 times and aseptic thrombi in the lymphatic tracts 15 times. Of the latter 5 were due to pure streptococcal infections. Septic thrombi in the veins develop by continuity but may also occur anywhere in the body from general or local causes.

Inflammatory changes in the heart were found in 140 (15.33 per cent) of the cases reviewed. There were cases of endocarditis. On culture, streptococci alone were demonstrated 67 times, staphylococci alone 16 times, and mixed infections 65 times. In the cases of endocarditis there was a marked preponderance of streptococcal infections.

Diseases of the lungs and pleura were found in 177 (20.4 per cent) of the cases. The infection usually spread by the hematogenous route.

Changes in the liver were discovered in only 2 per cent of the cases. In cases of septicopyemia they consisted chiefly of parenchymatous degeneration.

The kidneys were infected in 75.23 per cent of the cases. As a rule the infection occurred by the hematogenous route. Extensive parenchymatous injuries were often observed. Of 101 cases with pus foci in the kidneys, simultaneous endocarditis occurred in only 30. Accordingly there is no direct relationship between these two organic affections. Particular attention should be paid to diseases of the urinary tract in puerperal affections. VON KROCK (1).

NEWBORN

Parula Ramon, A., Jr.: Fracture of the Clavicle in the Newborn in Spontaneous Labor with Cephalic Presentation. (La fractura de la clavícula del recién nacido en el parto espontáneo en presentación cefálica.) *Bol. Soc. d. obst. y ginec. de Buenos Aires*, 93, xi, 437.

At the Rivadavia Maternity Hospital, Buenos Aires, fracture of the clavicle of the infant during birth is very rare, occurring only about once in 1,000 deliveries. The site of the fracture is usually the junction of the middle and anterior thirds of the bone. The prognosis is good for both anatomical and functional recovery.

Predisposing causes are large size of the child, small size of the maternal pelvis, and powerful

uterine contractions The greater frequency of the fracture in the children of multiparæ than in those of primiparæ is probably explained in part by the larger size of children born after the first child and the greater rapidity of labor, atypical mechanism of labor due to relaxation of the tissues, and diminution of the calcium content of the blood in multiparæ

Predisposing causes in the fetus are syphilis of the bones, rickets, auto-intoxication, and intra-uterine osteomalacia

In most cases the determining factor is the use of manual aid in the delivery of the shoulders Sudden and powerful traction and manipulation are dangerous even when they are employed according to the correct method The incidence of fracture of the clavicle of the child during delivery would be further reduced by judicious waiting on the part of the obstetrician and more properly timed use of manual aid in the release of an impinging shoulder

WILLIAM R. MEEKER, M.D.

MISCELLANEOUS

Eymer, H. The Treatment of Chorionepithelioma (Zur Behandlung des Chorionepithelioms) *Strahlentherapie*, 1932, xlv, 241

The author discusses the question as to whether chorionepithelioma should be treated surgically or by

irradiation The material of the Heidelberg Clinic, consisting of nine patients observed during the last twenty years, was investigated

In five of the cases the chorionepithelioma developed after a hydatidiform mole and in four after an abortion Six patients who were treated surgically are free from recurrence One has been well for twenty-one years, three for six years, one for three years, and one for one year One patient subjected to irradiation therapy in 1914, who received an enormous overdose and in addition, was given intra-uterine treatment with radium, died from irradiation cachexia Another patient died from cerebral metastases Nothing is stated about the local effect of the irradiation In a third case only a temporary effect was obtained from the use of the X-rays and radium, whereas the local implantation of thorium-X needles into the tumor gave an excellent result. However, the period of observation in this case is still very brief

According to Wintz, who reports excellent results from radium treatment of chorionepithelioma, X-ray irradiation appears also to be justified in these cases Overdosage is to be feared more than anything else A low hæmoglobin content does not contra-indicate irradiation Since, in the past, one-fourth of all the patients with chorionepithelioma died because of inoperability, the use of irradiation must be considered an advance in the treatment of this condition

SCHROEDER (G)

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

Camp, J. D., Bell, R. G. and Greene, C. H.: Calcification of the Suprarenal Glands in Addison's Disease. *Am. J. Roentgenol.*, 1932, 23:131, 504

Although isolated cases of roentgenological evidence of calcification of the suprarenal glands in Addison's disease have been reported, there are no available data on the frequency of such visible calcification. The authors therefore endeavored to determine the incidence of calcification in (1) suprarenal glands removed at autopsy and (2) the suprarenal areas in cases of Addison's disease.

In a series of thirty-four cases diagnosed as Addison's disease or tuberculous of the suprarenal glands, X-ray examination led to a positive diagnosis of Addison's disease in twenty-three and a questionable diagnosis of that condition in three. In eight it showed tuberculous lesions elsewhere. A series of normal glands were used for controls. The latter presented no evidence of calcification or increased density. The pathological glands showed wide variations in density with very obvious calcification in certain cases. Three types of calcification were recognized: (1) gross calcification of the entire gland, (2) multiple, discrete areas of calcification throughout the gland, and (3) homogeneous increased density of the whole gland suggesting a diffuse deposit of lime salts as in high-grade caseation. The findings were confirmed histologically and by chemical evidence of excessive calcium.

In eleven (32.3 per cent) of the thirty-four cases there was roentgenographic evidence of calcification in the suprarenal glands which probably could have been demonstrated by careful studies during life. The authors therefore examined the suprarenal areas in all cases of Addison's disease. An oblique view of the suprarenal region is necessary in order to reduce the superimposition of other shadows. With the patient supine on the roentgenographic table, the side of the body opposite the side to be exposed is raised to an angle of 30 degrees from the horizontal. The tube is centered vertically over the tip of the sternum. Stereoscopic films are of considerable assistance.

The shadows of calcification in the suprarenal region must be differentiated from those of calcification in cartilage of the ribs, calcified mesenteric glands, atypical gall stones, calcified portions and stones in the upper pole of the kidney, calcification in the abdominal aorta and its branches, and calcification in a paravertebral abscess and an old perinephritic abscess. As the suprarenal glands move with the kidneys during respiration, roentgenograms made during inspiration and expiration will help to identify shadows that ordinarily do not move with

respiration. In questionable cases, correlation of the roentgenographic and clinical data will usually determine the diagnosis. The more chronic pathological changes with fibrocapsulation or calcification appear to be most readily demonstrable roentgenologically. In Addison's disease due to simple cortical atrophy the roentgenograms would obviously be negative.

With the technique described the authors found calcification in the suprarenal glands in six of twenty-three consecutive cases of Addison's disease.

LOUIS NEWELL, M.D.

Law F. W. Adrenal Neuroblastoma. *Lancet*, 1932, 1:1111, 1

A male child eleven months old, was brought for treatment by its mother who stated that it was unusually irritable and she believed it had been blind for a week. The mother's two other children had been born prematurely and had died after a few weeks of life.

On admission to the hospital, the child responded in no way to any kind of visual stimulus. A diagnosis of cortical amaurosis from posthemorrhagic meningitis was made. The temperature was normal, the pulse rate 150, and the respiration 24. The tonsils and submaxillary glands were enlarged. There was slight abdominal distention and several subcutaneous nodules were palpable. One of the latter was situated over the eleventh rib in the scapular line, one, with satellite, in the left iliac region, one in the left lumbar region and one in the right iliac region. These lumps, which measured about 1 in. square, were hard and had irregular edges. They could be moved freely under the skin, but were attached to the deep structures. In the left hypochondrium there was a palpable, tender abdominal tumor the size of an orange, which moved with respiration and was believed to be the spleen. The pupils were inactive, but the other reflexes were normal. On biopsy the subcutaneous nodules showed poorly vascularized fibrous tissue. Examination of the blood revealed a typical secondary anemia with a definite lymphocytosis (which has never been noticed before) and polychromasia. The cerebrospinal fluid was practically negative. There never was any proptosis, papilledema, or other ocular manifestation except absence of the pupillary reflex. The child was restless and fretful, and its head was definitely retracted. The temperature and pulse rate varied considerably. Vomiting occurred four times. Loss of weight soon became evident. A blood stain which became progressively larger and darker appeared on the right lower eyelid and before death another appeared on the left lower lid. Death was preceded by an increase in the cerebrospinal fluid pressure.

At autopsy the eyelids were found discolored by subcutaneous hæmorrhage. In the position of the left suprarenal gland there was a mass of irregular growth, beneath and distinct from the spleen and closely adherent to the left kidney. The mass was a soft but solid tumor about the size of a tangerine, which lay upon the upper pole of the left kidney but did not involve the kidney. Surrounding the tumor and intimately connected with it were other smaller masses, some of which were firm and nodular and one of which was cystic. The cut surface of the tumor had a honeycombed appearance and was traversed by fibrous bands between which were numerous shallow and depressed areas. The right suprarenal gland was normal. The surface of the liver was apparently normal, but deep in its substance there were numerous hæmorrhagic foci of malignant infection. The lower pole of the right kidney showed a small nodular growth. All of the other abdominal organs appeared normal. In the thorax, enlarged and fleshy glands were found in the anterior mediastinum, especially behind the left sternoclavicular joint, in the bifurcation angle of the trachea, on the posterior thoracic wall in immediate association with the ribs on both sides of the spinal column, on the right side of the diaphragm, and in the lower lobe of the right lung. The brain showed considerable œdema of the pia-arachnoid membranes and definite pressure columns in the cerebellum. At the base of the skull there were two dark swellings beneath the dura anteriorly, one in the right orbital fossa and the other in the pituitary fossa. Both contained thick bloody fluid with little or no firm tissue. A slight circumscribed discoloration above the left supra-orbital ridge suggested the beginning of another metastasis. On histological examination the suprarenal tumor and its metastases were found to be composed of small, round, closely packed, and deeply staining cells such as are typical of a neuroblastoma of the suprarenal gland.

In this case the distribution of the secondary deposits was not typical as no deposits were found in the lumbar glands and only one deposit was discovered in the cranial bones. The subdural deposits were very unusual. The blindness came about in an unusual and hitherto unrecorded manner, without the proptosis, papilloedema, or optic atrophy usually found in these cases. The diagnosis was extremely difficult and never made definitely. Leukæmia was considered although no fundus changes were present. It is possible that the subcutaneous nodules were atypical secondary deposits in which the cellular elements had degenerated. LOUIS NEUWELT, M D

Medina, E. R. *Pyelography by Elimination of Opaque Substances* (La pielografía por eliminación de sustancias opacas). *Rev. med. de Colombia*, 1932, 11, 488, 544, 600, 656

The author reviews the history of pyelography, discusses the various substances employed as opaque media, and describes the technique used in making pyelograms. He then reports twenty-one

cases of various pathological conditions in which pyelography is done, including tuberculosis, renal lithiasis, hydronephrosis, and pyonephrosis. The article contains numerous roentgenograms of pathological and normal kidneys.

AUDREY GOSS MORGAN, M D

García, A. E., and Monserrat, J. L. *The Functional Value of the Kidney Involved by a Neoplasm* (Valor funcional del riñon tumoral). *Rev. Asoc. med. argent.*, 1932, XLVI, 677

The divergence of opinion regarding the functional value of the kidney involved by a neoplasm may perhaps be explained by the difference in the tests used to determine the function. The authors studied the problem in eight cases in which a nephrectomy was done for tumor. In each case specimens of urine were obtained from each kidney with the aid of a ureteral catheter, the specimens were measured, urea and chloride determinations were made, and intravenous phenolsulphonphthalein and indigocarmine tests were carried out.

A definite functional deficiency of the involved kidney was found in all of the cases, including one case of early neoplasm diagnosed by pyelography. This deficiency seemed to vary with the amount of kidney tissue involved by the neoplasm and was manifested by all of the tests and criteria except one indigocarmine test. W. H. MARTINEZ, M D

BLADDER, URETHRA, AND PENIS

Randall, A. *The Pathology of Bladder-Neck Obstructions*. *J. Urol.*, 1932, XLVIII, 509

The author gives a simple pathological classification of bladder-neck obstructions. The three major pathological entities of the prostate producing the well-known symptoms of prostatism are, in order of decreasing frequency, as follows:

1. *Glandular hypertrophy*. The prostate is a racemose gland with five more or less definite glandular masses. Microscopically, the picture is that of adenoma. The common types of hypertrophy are:

a. Simple bilateral lobe hypertrophy, intracapsular variety. This produces symptoms without signs. Cystoscopic resection is useless.

b. Solitary commissural hypertrophy. This usually arises from the posterior region. It is a type of middle lobe enlargement accompanied by trigonal hypertrophy. Cystoscopic resection is of some benefit.

c. A combination of Types a and b. Sphincteric dilatation occurs and the lateral lobes promptly herniate through the sphincter. The condition is often accompanied by a large amount of residual urine, weakness of the bladder walls, and cardiorenal complications. Resection may help to diminish the residual urine, but its curative effect will probably be transient.

d. Solitary hypertrophic growth of the subcervical gland of Albarran. This is the second type of middle lobe enlargement. It is of submucous

origin and causes mechanical obstruction because of its position. It is rarely of great size. Resection should result in cure.

e. A combination of subcervical and lateral lobe enlargement associated with sphincteric dilatation and intravesical protrusion. The growth is unlimited and often gigantic. Resection fails.

f. *Median bursiformis*. This is a fibrosis which inevitably causes stenosis of the bladder orifice, residual urine, and all of the symptoms of prostatism. It appears to be secondary to long-standing prostatic infection. Resection gives excellent clinical results. In the literature it has been called "contracture of the vesical neck," "prostatismus sans prostate," "prostatism in miniature," "acerosis of the internal sphincter," atrophy of the prostate, and "fibrosis of the vesical orifice."

g. *Carcinoma*. The vast majority of the carcinomata are true adenocarcinomata. The tumor may start in and involve any portion of the prostate. Grossly the following two types are distinguished:

a. A type in which the malignancy remains intracapsular and spreads by direct proliferation or blood-borne metastases occur. In this type resection is of no value.

b. A type with obstruction from phlegmonous induration about the vesical outlet which hampers the sphincter and trigonal muscles and produces narrowing of the posterior urethra. In this condition resection is of value as a palliative measure to overcome urinary retention. It is preferable to permanent suprapubic drainage. *MAURICE MENESSIER, M.D.*

Kirwin, T. J.: The Evolution of Vesical Neck Resection. *J. Urol.* 1931 xlviii, 239

The author describes a new modification of the McCarthy type of resectoscope which he has used for the past two years.

In the use of any such instrument for the relief of obstruction of the neck of the bladder a relatively low amperage is safer for cutting as well as for hemostasis. High temperatures cause deep coagulation with resulting necrosis and the possibility of post-operative hemorrhage, while conservative coagulation prevents necrosis and causes little injury of the tissues which are not resected, leaving them capable of regeneration without scarring. The author has obtained good results by simply applying a needle electrode with low amperage for a minute or less to the bulging mass. The principal feature of his instrument is a rotary wire electrode which simultaneously resects the tissue and seals up the severed vessels. The electrode works by a lever. Its rotary motion follows the contour of the bladder neck, leaving behind a smooth cone-shaped orifice. The field is cleared by irrigation and the electrode then slowly rotated so as to pass over the bleeding point and effect proper coagulation with reduced current strength. Other important features of the instrument are summarized as follows.

1. The rotary electrode is in a fixed position while the cutting is in progress. This prevents the loop

from riding over the tissue engaged in the fenestra instead of passing through it.

2. The sheath, being small, does not transmit small urethra. In Size 24 the eccentric swing of the rotary electrode at its highest point is 25, the size of the cut therefore equalling that of a larger instrument. Size 28 makes a cut equal to 32, permitting the removal of sections of tissue of a size heretofore obtained only by the use of instruments so large as to be injurious to the urethra.

3. While the fenestra provides absolute protection for the vesical mucosa so that the urologist need not depend wholly upon his skill to avoid piercing the wall of the bladder or urethra, the electrode reaches outside the fenestra in its eccentric swing, making larger resections possible.

4. Fixation of the tissue to be resected permits every section to be brought out as it is cut off, the field therefore being kept unobstructed at all times.

With the instrument as now constructed the author believes the method to be ideal for:

1. Contraction of the vesical neck.
2. Carcinoma of the prostate (if any instrumentation is possible).
3. Congenital valves of the urethra.
4. Subcervical hypertrophy of Albarras's glands.
5. Slightly enlarged median lobe.
6. Moderate median lobe hypertrophy with small intravesical protrusion of the lateral lobes or intra-urethral lateral enlargement.
7. Slightly enlarged lateral lobes without median enlargement.

8. Very aged patients unable to undergo open operation.

9. Conditions of marked renal impairment, grave heart lesions such as arteriosclerosis, or other constitutional complications which do not improve under pre-operative preparation. In these conditions the aim is merely to establish drainage.

For the patient in good physical condition presenting marked intra-urethral and intravesical protrusion of the lateral lobes and hypertrophy of the middle lobe, open operation will always be indicated. When the intra-urethral route is followed, exactly the same pre-operative precautions must be observed.

CLAUDE D. HOLLER, M.D.

GENITAL ORGANS

McCarthy J. F.: A Technical Consideration of Endoscopic Revision of the Obstructing Prostate. *J. Urol.* 1931 xlviii, 59.

The author reports the observations he has made in the past year and a half in the endo-urethral management of prostatic obstructions. He states that the use of this procedure should be limited to urologists who are skilled in endo-urethral instrumental methods and whose clinical and surgical training has been such as to enable them to select the cases correctly and take proper care of any complications that may occur sooner or later. While McCarthy has performed the endo-urethral opera-

tion with gratifying results in practically all forms and types of prostatic hypertrophy and during the past year and a half has performed only three or four prostatectomies, he believes the method should be limited to the correction of prostatic fibroses, slight and moderate enlargement of the middle lobes, and moderate combined enlargement of the middle and lateral lobes. Even in some of these cases, i.e., those in which bleeding occurs readily on instrumental examination and those in which instrumental examination is followed by a rise in the temperature, it may be better to do a preliminary cystotomy and decide later whether a prostatectomy or revision should be performed. Revision may be contraindicated. In cases in which the prostate is large or succulent or spongy, bleeds readily, and is of an angular form hindering the free use of the instrument, a cystotomy should be done first and prostatectomy or revision later. For decompression, the author favors the use of a No. 8 to 10 French soft rubber catheter. In most of his cases he has operated under caudal and paravertebral anesthesia induced with novocain and supplemented by urethral instillations of diothane. In spinal anesthesia, because of the absence of the bladder reflex, there is danger of rupture of the bladder from over-distention with the irrigating fluid.

With regard to the amount of tissue to be removed there is a wide difference of opinion. The middle lobe is usually attacked first because the lateral lobes are then easier of access and also because, if necessary, the operation may be terminated at this point with symptomatic relief.

In the after-care the author uses a No. 24 French soft rubber catheter with a whistle tip.

McCarthy cautions against the use of a too strong current to obtain complete hemostasis as a strong current will itself puncture the vessel. However, he urges the blanching of every hyperemic point. Every precaution should be taken to prevent infection.

CLAUDE D. HOLMES, M.D.

Bumpus, H. C., Jr. Results Five Years After Transurethral Treatment of Benign Prostatic Obstruction. *J. Urol.*, 1932, xxviii, 561

Of 66 patients heard from five years after transurethral treatment of benign prostatic obstruction, 48 expressed themselves as satisfied with the result and 18 as dissatisfied. Of the latter, 6 had a prostatectomy later. Of the 12 others who were dissatisfied, 2 wrote that they were free from urinary symptoms, but had to have sounds passed occasionally. Accordingly it appears that the earlier predictions that late strictures would develop in the majority of the patients treated by the described method was refuted.

This study of 102 cases in which prostatic tissue was removed through the urethra more than five years ago because of urinary obstruction seems to indicate that, with the improvement in technique which has occurred in the last five years, transurethral resection should be performed with less risk,

should require less time spent in the hospital and consequently less expenditure of funds, and should yield a final functional result equal in permanence to that usually obtained after prostatectomy.

Day, R. Endoscopic Resection of the Prostate. *J. Urol.*, 1932, xxviii, 569

By "prostatic resection" the author means the excision of all obstructing portions of the prostate. He does not apply the term to small excisions made from large adenomatous prostates on the theory that when a small amount of tissue is excised from such prostates marked shrinkage will ensue. In cases of fibrosis and small median lobes, resections are minor, but when more than 5 gm. of tissue are removed, the operation becomes a major procedure. In the sclerotic and median lobe hypertrophies resection is excellent, but in the classical hypertrophies it is still in the experimental stage. It is a procedure for the expert. Day believes that patients with generalized hypertrophy fare as well or perhaps better if subjected to enucleation. The various requirements of major resections have been met best by the use of the cutting loop developed by McCarthy. Bleeding is much more easily controlled with the change of current. The Stern-Davis and the McCarthy panendoscope have advantages. Skillful surgeons have obtained good results also with other instruments.

Day reviews seventy-one loop resections performed since November 1, 1931 by seven well-trained urologists. There were nine deaths—six from primary hemorrhage and ensuing shock, two from multiple abscesses of the kidney, and one from acute dilatation of the heart. The total mortality was 12.7 per cent. The first forty-one cases were unselected. In most of them the prostatic hypertrophy was of Grade 4. All of the deaths occurred in the first forty-one cases, the mortality in this group being therefore 22 per cent. A large number of the patients were considered unfit or extremely poor risks for prostatectomy. Of the thirty selected cases, eighteen were private cases. The freedom from undue bleeding in the selected cases was attributed chiefly to the use of a two-machine hook-up. In the thirty-nine cases in which the author performed a major loop resection there were two deaths, both due to primary hemorrhage. In both of the fatal cases the hypertrophy was of Grade 4. In each, about 20 gm. of tissue were resected. Four of the seventy-one patients whose cases are reviewed were later subjected to prostatectomy. One of them was subjected to resection twice with the removal of a total of 33 gm. of tissue. Several months after the resection the residual urine varied from 75 to 100 c.cm.

ELMER HESS, M.D.

Alcock, N. G. Ten Months' Experience with Transurethral Prostatic Resection. *J. Urol.*, 1932, xxviii, 545

After investigating Davis' work, Alcock decided to give transurethral prostatic resection a trial. He

concluded that it offered excellent vision, permitted the accurate removal of an adequate amount of obstructing tissue, and allowed adequate control of hemorrhage. He decided to try it on all cases without selection and to draw no conclusions until he had used it in 150 consecutive cases.

Since August 1, 1931 he has seen 218 patients complaining of prostatic symptoms. Of these, 175 were subjected to resection. During the same period of time only 3 prostatectomies were done. The 175 patients were treated in a period of only ten months. The author states that it will be impossible to report a follow-up study until at least a year has passed since the resection. He states that he was extremely conservative in recommending operation.

The average age of the 175 patients was seventy-one and four-tenths years. The oldest patient was eighty-five years.

In 25 (16 per cent) of the cases the condition was a carcinoma, and in 147 it was a benign hypertrophy. Six of the patients had had previous prostatectomies, and 18 had had cystostomies.

In the last seven months the author has not done cystostomy as a preliminary step to resection. The preparation has been the same as for prostatectomy. Transverse block or spinal anesthesia has been used.

In the 175 cases 100 resections were done. Fifteen patients required 2 resections and 5 required 3. Of the 90 patients requiring more than 1 resection, 15 were among the first 50 treated. Of the 5 others, 3 had a carcinoma.

There were 18 deaths. The mortality was in direct ratio to the author's experience. Most of the disturbances occurred in the first 50 cases.

The amount of tissue removed was entirely inadequate. In the first 50 cases hemorrhage was controlled at operation. In practically all of these cases there were postoperative reactions manifested by chills and a fever of from 101 to 104 degrees F. Many of the patients were very ill.

The amount of tissue removed seems to have very little relation to the result. The effort should be made, not to see how much tissue can be taken out, but to determine accurately the site of the obstructing part and remove that part completely.

In the first 50 cases reviewed the resection required from one to two hours, whereas at the present time it requires only from twenty-five to fifty minutes.

In 3 cases the resection was a complete failure. One patient had a prostatectomy and a bed a cystostomy. All 3 died. Two deaths were due to coronary occlusion, and one was the result of cerebral thrombosis. Several of the 18 deaths are attributed to the author to faulty technique or faulty preparation.

In none of the author's cases has hemorrhage been responsible for death or exerted any effect on recovery. However, Alcock does not minimize the danger of operative bleeding. He believes that in general there is less bleeding in cases of carcinoma than in those of hypertrophy and that there is no difference in the amount of hemorrhage in cases of

large prostate and cases of small prostate. He has found that there is more hemorrhage when the cutting is done at 4 and 8 o'clock of the circle than when it is done on the floor or more anterior in the lateral lobes. The bleeding which occurs from the cut edges of the mucous membrane near the bladder is more profuse than that occurring deep down in the prostate and is the most difficult bleeding to control. In 2 of the earlier cases reviewed it was necessary to remove the resectoscope and insert a cystoscope to get at the bleeding point. The author continues to cut from one area until the hemorrhage begins slightly to interfere with vision and then carefully searches for the bleeders and stops them one at a time. When he finishes cutting from one area he controls the bleeding from that area before he inserts in another. He attempts to cut with a minimal amount of coagulation and to control the hemorrhage by coagulating only at the source of the bleeding. Most of the reactions occurred in the first 50 cases reviewed.

In none of the cases reviewed was there true incontinence. Of the 3 patients who could not control urination, 2 was insane and the 3 others had advanced cerebral arteriosclerosis and were mentally irresponsible.

In practically all of the cases there was some residual urine. This seemed to persist for some time and then gradually disappeared. The author believes that residual urine must persist for several weeks before a second resection is indicated.

The most common causes of death have been sepsis and uremia. In 2 of the cases reviewed there was an encysted cystitis. In 6 of the cases in which vasectomy was not done, epididymitis developed. Therefore vasectomy is not a part of the preparation. Foul-smelling urine for several days after resection indicates necrosis and gangrene. Two patients died of these conditions. They have not occurred in the last 50 cases.

Transurethral prostatic resection is of value from the standpoint of economy as it increases by 1/5 times the number of patients who can be cared for on the same number of beds. The saving in pain and cotton resulting from the new method as compared with the old methods of prostatectomy has amounted to approximately \$7,000 during the first year.

ELMER HICK, M.D.

MISCELLANEOUS

Hyman, A. and Edelman, L.: Medical and Surgical Aspects of Hematogenous Infection in Urology. *J. Urol.* 93: 2214, 73.

Bacteremia from disease of the urinary tract is more common than was formerly believed. Even when cultures are made at once, the condition is still often unrecognized because of errors in technique or withdrawal of the blood at the improper time. In the early days of urology it was noted that severe reactions with chills and fever occasionally followed the passing of sounds. The fever was called "urethral

fever," but is now known to have been due to infection of the blood stream

In a consideration of invasions of the blood by bacteria it is necessary to distinguish between bacteræmias, which as a rule are transitory and subside spontaneously, and true septicæmias, which run a very severe course often associated with metastatic phenomena and a very high mortality rate

It is not always possible to determine the portal of entry or the focus from which a bacteræmia originated. In the majority of the authors' cases the condition had its origin in the kidney or urethra. Undoubtedly in some cases dormant organisms are disseminated in the blood stream by trauma. As the urethra normally harbors organisms, so-called catheter fever may not be due to the passage of infected instruments. Following minute abrasions, absorption takes place

The clinical course of blood-stream invasion differs in no way from that of sepsis due to other urological conditions. The presence of colon bacilli in the blood stream is usually transitory. The coccal infections are more apt to be followed by secondary manifestations and to run an atypical course, especially as regards the temperature curve. The staphylococcal infections of the renal parenchyma resulting from sepsis are often difficult to diagnose. The constitutional symptoms vary according to the severity of the local lesions in the kidney

Preventive measures are of prime importance. Gentleness in instrumental examinations and rigid asepsis in instrumental examinations are absolutely essential. In the presence of infection, liberal intravenous and intramuscular injections of fluids with glucose will help to overcome the sepsis and supportive measures, including blood transfusions, are indicated to keep up the resistance

In forty-five of the sixty-four cases reviewed by the authors, the infection was due to bacilli and in

nineteen they were due to cocci. In the cases of bacillary infection the mortality was 20 per cent, and in the cases of coccal infection it was 68.4 per cent

JOHN P O'NEIL, M.D

Stannus, H S. The History of the Recognition of a New Venereal Disease Comprising Climatic Bubo, Lymphogranuloma Inguinale, Esthiomène, Chronic Elephantiasis and Ulceration of the Vulva, the Genito-Ano-Rectal Syndrome, Inflammatory Stricture of the Rectum. *Proc Roy Soc Med*, Lond, 1932, xxvi, 7

Climatic bubo, a disease seen in the tropics, is caused by an ultramicroscopic virus. It was first described in 1865. It has apparently been proved to be neither syphilitic, tuberculous, nor cancerous. In 1925 Frei introduced a subcutaneous test which is specific for the condition. In 1930 Hellerstrom and Wassen were able to infect monkeys by intracerebral inoculation of material obtained from infected inguinal glands. The incubation period was from six to twelve days. Later an antigen prepared from the brain, cerebrospinal fluid, or glands of the monkey yielded a positive Frei skin test in patients affected with the disease. The condition was thus proved to be a definite entity

The disease involves the lymphatic system most frequently. In the male the primary lesion is usually an ulcer in the coronary sulcus. After from six days to six weeks the inguinal glands on one or both sides become swollen. Spontaneous resolution may occur or suppuration may develop. In the female the clinical picture is similar. The general symptoms include chills, fever, lassitude, pain in the limbs, loss of weight, and prostration. In a small percentage of the cases genital elephantiasis develops

The treatment should include measures to conserve the glands and the evacuation of all foci to prevent recrudescence

MAURICE MELTZER, M.D

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Correra, T.: The Clinico-radiological Picture of Osteomyelitis (Il quadro clinico-radiologico della osteomielite) *Radiol. med.*, 1932, xii, 1-3

The author reports the case of a boy twenty years of age who had had multiple fractures from slight causes since the age of three years. The findings of clinical and roentgenological examination led to a diagnosis of fragilitas osium (osteomyelitis). In the differential diagnosis of this condition it is necessary to rule out rickets, osteomalacia, achondroplasia, osseous syphilis, and osteopetrosis.

Enrique T. Llover M.D.

Ley, A.: A Case of Multiple Osteo-Arthropathy and Regional Adenopathy in a Tubercle, with a Discussion of the Etiopathogenesis of this Condition (Consideraciones etiopatogénicas propiadas de un caso de osteoartropatías múltiples y adenopatías regionales en un tubérculo). *Rev. de ciruj. de Barcelona*, 1932, ii, 2.

The case reported was that of a man of sixty-five years whose illness had begun about a year previously with weakness of the right leg. There was swelling of the right knee joint, but no fever or general disturbance. When the patient came for examination he showed the clinical and neurological picture of tubercles and marked atrophy of the muscles of the arms, thorax, and shoulder girdle. Roentgen examination disclosed the typical picture of tubercle osteoarthropathy of the third and fourth lumbar vertebrae, the hip joints, and the knee joints. There were no pathological reactions in the blood and spinal fluid, as is not unusual in tubercles. Puncture of the right knee yielded a fluid which showed an intensely positive Wassermann reaction.

Excision of one of the inguinal glands, which were enlarged on both sides, showed an intense plastic peridontitis uniting the glands into packets. Histological examination of the gland disclosed a very chronic inflammation with intense lymphoid infiltration, great destruction of the follicular and trabecular systems, and considerable vessel proliferation in the capsule and perichryma. The newly formed vessels occupied a large part of the gland. Their walls were thickened by sclerosis of the media which was so marked that in some places the vessels were obliterated. The patient showed no signs of changes in the sympathetic nervous system.

The author concludes that osteopathies of this type are due, not to nervous or trophic causes, but to syphilitic infection of the bone and its nutrient vessels. This theory is supported by the fact that

when given before irreparable changes have taken place, specific treatment yields good results.

Aurelio Goss Monsiv, M.D.

Jenkins, H. P., and Delaney, P. A.: Benign Angiomatous Tumors of Skeletal Muscles. *Surg. Gynec. & Obst.* 1932, lv, 464.

This article is based on 256 cases of angiomatous tumors arising primarily in the skeletal muscles. The age and sex of the patient, the history of the muscle involvement, the diagnosis, the treatment, the pathological changes, and the results in 62 cases are presented in tables. One case is reported.

The most consistent finding was a congenital factor. In 27 per cent of the cases there was a history of trauma.

The diffuse type of tumor was much more frequent than the circumscribed type. As a rule there was no extension into the tissues surrounding the muscle.

Microscopic examination revealed cavernous spaces in a connective tissue stroma.

In 70 per cent of the cases the tumor occurred during the first twenty years of life and in 42 per cent it was located in the lower extremities. Quadriceps involvement was present in 27 per cent.

The tumor mass usually develops slowly at first and is diffuse and tender. As a rule the skin overlying it is freely movable.

Pain was present in more than half of the cases reviewed.

The treatment indicated is local excision. The prognosis for life is excellent, but in 6 per cent of the cases reviewed recurrences developed.

Robert V. Foxworth, M.D.

Marrion Posadillo, G.: The Present Day Conception of Rheumatism (Concepto actual del reumatismo). *Clin. v. 166* 1932, xvii, 251.

The author discusses both acute and chronic arthritis. For most of the chronic forms he recommends a more liberal nutritious diet to promote elimination. He emphasizes that the digestive function should be kept at its best and any tendency toward sluggish elimination should be corrected by diet if possible.

In all cases of arthritis, foci of infection in the tonsils, teeth, and prostate gland should be eliminated. Even though they may not be the cause of the rheumatism, they have an unfavorable effect on the course of the condition.

In some cases, mechanotherapy, physical therapy and hydrotherapy are of value.

Of the antirheumatic medicines, the author favors atropine and its derivatives. The effects should always be carefully observed. In some cases these medicines seem to have an almost specific action, and

in almost all they give at least partial relief. The intermittent use of iodides is also beneficial. Auto-genous vaccines from pharyngeal and intestinal foci were tried by the author in five cases. In one case the results were excellent, but in four cases they were negative.

Mercury and bismuth should be tried in the dry varieties of arthritis even when there is no suspicion of specific disease. The author employed them in a series of fifteen cases with good results.

In certain chronic non-tuberculous forms of arthritis small doses of the salts of gold recommended by Forestier are excellent. In tuberculous cases they are not always beneficial. Their effects were carefully studied by the author in ten cases of non-tuberculous chronic arthritis. In ten cases they gave good results, in three they caused an improvement, and in two they had no effect.

Collip's parathyroid extract was used in two cases with questionable benefit. A more thorough clinical trial is planned for the future. In the author's opinion its use is more rational and less harmful than extirpation of the parathyroids.

In conclusion the author says that arthritis is one of the most obstinate diseases. The syndrome is complicated and many phases of the condition require more investigation. For the present it is of the utmost importance for clinicians to learn to apply the numerous therapeutic measures already available.

WILLIAM R. MEEKER, M.D.

Coste, F., and Forestier, J. *The Streptococcus and Chronic Rheumatism* (Streptocoque et rhumatisme chronique). *Presse méd.*, Par., 1932, **xl**, 1589.

The authors first review the literature on investigations to determine the cause of chronic rheumatism. In their own studies they first used Cecil's technique of culture and re-inoculation. The cultures were observed for longer than a month and often again centrifugized and re-inoculated at the end of that time.

In five cases, Cecil's technique was employed with a French peptone. The conditions studied were a subacute polyarthritis of unknown origin, arthritis of the knee of possibly tuberculous origin, a syphilitic arthropathy, arthritis of the ankle of possibly gonococcal origin, and vertebral rheumatism of possibly gonococcal origin. The results were negative.

In another group of cases Cecil's technique was followed with the use of the peptone employed by Cecil. Cultures of the blood were made in the cases of twenty-one patients with subacute or chronic polyarthritis of unknown or doubtful origin, two patients with oligo-arthritis of uncertain origin, four patients with dry arthritis of probably tuberculous, gonococcal, or syphilitic origin, two patients with acute articular rheumatism, and six controls (five with scarlet fever in the initial stage and one with facial neuralgia). The articular fluid was studied in the case of a patient with oligo-arthritis of possibly tuberculous origin and a patient with

subacute hydarthrosis of the knee of unknown origin. The results were negative.

In a third group of cases the authors studied twenty samples of whole citrated blood and five samples of articular fluid. The blood was obtained from eleven patients with polyarthritis of unknown origin, three patients with oligo-arthritis of unknown origin, five patients with oligo-arthritis of probably tuberculous or gonococcal origin, and one patient with acute articular rheumatism. The articular fluids came from a patient with a hydarthroidal polyarthritis, two patients with hydarthrosis of unknown origin, a patient with hydarthrosis of probably tuberculous origin, and a patient with an acute hydarthrosis in which a peculiar type of coccus was found. No streptococci were isolated.

In all, a negative result was obtained in fifty-seven samples of blood and seven samples of articular fluid.

The authors also carried out agglutination and fixation tests and inoculations of animals with typical streptococci and streptococci of the viridans type which were furnished by Cecil. PAGE

Elmslie, R. C. *Calcareous Deposits in the Supraspinatus Tendon*. *Brit J Surg.*, 1932, **xx**, 190.

Elmslie reports seven cases of shoulder pain in all of which operation revealed an inflammatory swelling and in some of which it disclosed calcareous granules and a small cavity in the humerus. Clinically most characteristic is a point of tenderness over the great tuberosity. In some cases trauma may play a part. The roentgen findings are very characteristic, but there may be a change in the shape of the shadow suggesting the presence of a sac containing opaque fluid. In some cases the presence of a cavity may be suggested by a patch of rarefaction in the great tuberosity.

In the author's cases operative removal of the lesion gave very satisfactory results.

In the acute cases there is a central yellow patch which resembles a thin-walled abscess and is surrounded by inflamed tissue. In the chronic cases little abnormal is to be seen and it may be possible to determine the site of the calcareous matter only by making an incision into it.

The lesion may be dealt with either by excising it completely down to the bone or by opening and curetting. The author prefers the former procedure. He makes the incision along the anterior border of the deltoid and lifts the muscle back.

In the cases reported, the pathological changes varied. In the acute cases there was a central cavity filled with blood which contained non-crystalline calcareous matter in its margins and was surrounded by fibrous tissue containing patches of acute inflammation. In the chronic cases no definite central cavity was found and the calcareous material was embedded in fibrous tissue showing no evidence of acute inflammation. All cultures were negative. The results of chemical analysis of the calcium deposit were as follows:

	On
Calcium phosphate.	176
Calcium carbonate	15
Undetermined ash	31
	—
Total ash	162

In conclusion the author says that the nature of these calcium deposits is still uncertain. As nothing similar has been found elsewhere in the body it appears that a local anatomical lesion must be responsible for their occurrence. It seems logical to assume that a tear of the insertion of the supraspinatus occurs with resulting effusion of blood and of fatty tissue from the interior of the cancellous spaces, that calcification then occurs in them, and that the calcareous matter acts as an irritating foreign body.

FREDERICK A. JOSTA, M.D.

Keyes, D. C., and Compere, E. L.: The Normal and Pathological Physiology of the Nucleus Pulposus of the Intervertebral Disk. An Anatomical, Clinical, and Experimental Study. *J Bone & Joint Surg* 93A, xiv, 897

This article, which is based on a careful study of the embryology, physiology and pathology of the intervertebral disk and its nucleus pulposus, confirms the work of Schmorl. The nucleus pulposus was found to be derived from notochord tissue with interspersed fibrous material and cartilage cells from the surrounding envelope of fibrocartilage. Therefore it is a highly specialized structure and neither a vestigial remnant of the notochord nor the result of degeneration of fibers of the annulus fibrosus of the intervertebral disk. The cartilage plate covering the flat plate of the vertebral body and the epiphyseal ring at the periphery of this surface are genetically one structure and are comparable to the epiphyses of the long bones.

As the nucleus pulposus is a fibroglutinous substance it is incompressible. It is under pressure because of the elastic tension of the surrounding annulus fibrosus and the forces normally transmitted from one vertebra to another. It is limited above and below by the cartilage plates which, together with the annulus fibrosus, maintain it in position. The incompressibility of the nucleus pulposus makes it the axis of motion between the vertebrae. Proper spinal mobility depends on its integrity. In ruptures of the annulus fibrosus or cartilage plates, even if they are minute, the semiliquid nuclear material escapes. A small leakage of this material may cause no symptoms as the intervertebral disk has no nerve fibers, but following the loss of a considerable amount the weight of the body is transmitted through the fibrocartilaginous annulus fibrosus and the latter becomes thinner ultimately allowing the body weight to be transferred to the vertebral bodies themselves and thereby producing the lipping characteristic of spinal osteo-arthritis. In breaks of the cartilage plate, the nucleus pulposus material is

prolapsed into the spongy bone of the vertebral body. Here it sets up a reaction and becomes transformed into a cartilage nodule surrounded by sclerosed bone which may be seen in the roentgenogram.

The various lesions of the nucleus pulposus can be divided into those due to pathological conditions in the nucleus itself, those occurring in the cartilage plate, and those occurring in the vertebral bodies. In kyphosis, the nucleus may undergo retroflexion or anteflexion, and in scoliosis it may undergo lateral shifting. This shifting may account for some of the difficulties in the correction of these deformities. In advancing age, calcification or dehydration of the nucleus may occur and lead to the development of osteo-arthritis.

Lesions of the cartilage plate include congenital defects, which have been suggested as a cause of juvenile dorsal epiphysitis. Injuries to the plate due to chronic slight trauma or acute trauma associated with fractures of the vertebral bodies are seen. Koemmel's disease may be due to plate fractures with sufficient nuclear prolapse on each side of the vertebral body to allow fusion of subsequent cartilaginous nodules with complete division of the bone. Subsequent necrosis from circulatory disturbances explains the body collapse. Fibriation of the plate from wear and tear allows nuclear leakage with dehydration and is an etiological factor in degenerative or osteo-arthritis of the spine. Pyogenic infections or tuberculosis may also destroy the plate.

Pathological conditions in the vertebral body itself, such as osteomalacia, osteitis fibrosa, and neoplasms, may result in thinning and finally bursting of the cartilage plates with prolapse of the nuclear material into the adjacent vertebral body.

The authors report several cases illustrative of the various types of diseases of the intervertebral disks. The case histories are supplemented with roentgenograms.

In conclusion the authors discuss briefly the results of experiments on dogs in which the intervertebral disk was traumatized and nuclear material allowed to escape. Thinning of the disk and sclerosis with lipping of the vertebral margins resulted, giving further evidence in support of the theory that hypertrophic spinal osteo-arthritis may result from loss of the nucleus pulposus.

CHARLES C. OTT, M.D.

Hellmer H. Roentgenological Observations Regarding Disturbances of Ossification in the Borders of the Vertebrae (Roentgenologische Beobachtungen ueber Ossifikationsstoeerungen in Linien vertebrae). *Acta radiol* 93, xii, 483.

The author reports thirteen cases in which roentgen examination revealed defective ossification in the borders of the vertebral bodies resulting in a lack of fusion between parts of the epiphyseal centers of the latter and the rest of the body. These defective ossifications present a well-defined roentgen picture by which they can be distinguished from calcareous and osseous deposits in the anterior part of the

intervertebral fibrocartilages and from fractures in the borders of the vertebral bodies

Lowman, C L The Relation of the Abdominal Muscles to Paralytic Scoliosis *J Bone & Joint Surg*, 1932, xiv, 763

If hereditary congenital faults are excluded, the chief factors in the production of scoliosis are gravity pull, skeletal asymmetry such as that due to a shortened leg, and alteration of muscle action. Each of these factors is present in some degree in all cases of scoliosis, but in paralytic scoliosis in the growing child the initial cause is altered muscle action which allows the force of gravity to act in the wrong direction. Altered muscle action must be the cause of scoliosis developing in paralyzed children who have been treated continuously in a recumbent position.

The manner of production of lateral and rotary deformities of the spine by paralysis of the abdominal muscles and tests for the detection of weakness of these muscles are discussed. In twelve cases the author sought to combat scoliosis by introducing fascial strip transplants into the abdominal wall, either subcutaneously or in the rectus sheath, to give added strength to weakened areas. He embeds the strips in a radiating direction from the umbilicus, fastening one end to the healing portion of muscle and the other to the bony pelvis or costal margin. He has thereby achieved improvement in stabilization of the trunk on the pelvis. In all of the cases the results were encouraging. The procedure has benefited some patients with chronic scoliotic deformities and gives promise of being of value in the prevention of deformities in early cases.

CHESTER C. GUY, M D

Chandler, S B, and Kreuscher, P H A Study of the Blood Supply of the Ligamentum Teres and Its Relation to the Circulation of the Head of the Femur *J Bone & Joint Surg*, 1932, xiv, 834.

The literature has been quite contradictory regarding the blood vessels of ligamentum teres and their relation to the blood supply of the head of the femur. The authors made gross and microscopic studies of 114 ligamenta teres which were removed from cadavers in the anatomy laboratory. Vessels were found in all of the ligaments, but there was a considerable variation in their number, regardless of the age at the time of death. In the majority of cases the vessels measured from 0.2 to 1.5 mm in diameter. In only 4 cases were they of precapillary size. Serial sections made at the junction of the ligament with the femur demonstrated an anastomosis of the vessels in both structures.

The authors conclude that the blood supply of the proximal portion of the femoral head is not derived entirely from the vessels in the ligamentum teres, but that these vessels are extremely important and should be carefully preserved in all operations on the hip. They emphasize that the drilling of holes through the head into the region of the ligamentous

attachment is associated with the danger of damaging the blood supply from this source and predisposing to later atrophy and absorption of the head.

CHESTER C. GUY, M D

Bravo y Diaz Cañedo, J Calcaneal Spurs in Industrial Surgery (Espolones calcáneos en cirugía de accidentes del trabajo) *Adas Soc de cirug de Madrid*, 1932, i, 289

The author divides calcaneal spurs into two groups. Those of the first group are the spurs which are formed during the period of development, between the ages of ten and twenty years. In the male, ossification of the nucleus of the calcaneal epiphysis begins at the age of ten years and is completed by about the twentieth year. In the female, it begins at the age of eight years and is completed at about the sixteenth year. During this period of development the epiphyseal nucleus may be torn away by the muscular traction of the tendons or fasciæ as the result of effort made in work or sports. The cartilaginous spur remaining later becomes ossified.

The second group of calcaneal spurs are acquired later in life on an inflammatory or arteriosclerotic basis as the result of periosteal irritation. Among the causes are (1) trauma, (2) specific infections such as gonorrhœa, syphilis, and tuberculosis, and (3) senility. Spurs of this type may be found at any periosteal site, but occur most often in areas of diminished resistance such as the sites of insertion of muscles, fasciæ, and tendons.

In the author's opinion, a roentgenogram is necessary to determine the cause of a calcaneal spur. In cases of spurs of the type formed during adolescence, the shadow in the roentgenogram is clear and shows that the spongy bone is continuous in the spur. In cases of spurs of the inflammatory type, the shadow in the roentgenogram is darker and frequently demarcated. Spurs of the first type usually do not cause any trouble, whereas those of the inflammatory type are nearly always painful. The chief causes of pain in spurs formed during the period of adolescence are (1) traumata due to a contusion or fracture of the spur with dislocation of the fragments and periosteal irritation, (2) weakness of the foot causing a change in the direction of the spur, and (3) chronic irritation with the formation of an inflamed subcalcaneal mucous bursa.

Since the use of the roentgen rays in diagnosis, calcaneal spurs have been found to be much more common than was formerly supposed.

The author concludes that when a laborer presents himself complaining of pain in the heel without any definite external sign of injury and roentgen-ray examination discloses a spur of the inflammatory type without fracture, the condition cannot be considered an industrial injury, but when a previously symptomless spur of the type formed in adolescence is rendered painful by trauma, the worker is entitled to compensation.

FRANCIS M. CONWAY, M D

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Carrío, B., and Rocher H. L.: Surgical Treatment of Chronic Non-Tuberculous Arthritis of the Hip (*Traitement chirurgical des arthrites chroniques non-tuberculeuses de la hanche*). *J d chir* 1932 xl, 372.

Whatever the primary cause of chronic non-tuberculous arthritis, it ends in the production of a dry arthritis deformans. The authors discuss the etiology and pathological anatomy of these conditions and the indications for the different types of operations. They state that physical therapy and orthopedic treatment should be tried first, and if they fail, osteotomy, grafting, or the driving of a bone graft through the head and neck of the femur should be done, according to the indications—for the purpose of correcting vicious positions, stabilizing the joint, and exercising a trophic action on the bone and cartilage lesions. These operations tend to restore the normal function of the joint. Stability may be assured by a supporting graft for an insufficient acetabulum, by osteotomy, bifurcation, or arthrodesis if movement is the chief factor causing the pain. In some cases mobility may be re-established by partial operations such as arthrotomy and chondrolysis or by arthroplastic resection. The freedom from pain necessary for function of the joint may be obtained by chordotomy but this operation is indicated only rarely.

The various anatomical forms of chronic arthritis of the hip and the mechanism of their pathogenesis should be studied and the operation adapted to the form of the disease in the particular case and the age and condition of the patient.

ANTONY GOSW MORGAN, M.D.

Messert R.: Osteoplastic Operations on the Hip. Indications and Late Results. Arthrodesis, Buttressing, Osteotomies, Resections, and Reconstructive Operations Performed Since 1924 (*Les opérations ostéoplastiques sur la hanche. Indications et résultats éloignés. Arthrodeses, boîtes, ostéotomies, résections, opérations reconstructives pratiquées depuis 1924*). *Bull. et mémoires de chirurgie de Paris* 1932, xxiv, 30.

In operations on the hip an orthopedic table which completely immobilizes the patient is indispensable. Only by the use of such a table is it possible to apply a plaster cast without moving the hip. In the cutting of bone grafts an electric rotary saw is of great aid.

Arthrodesis should be done only to bring about more rapid completion of a process which, without it, would require months or years and would be complicated by deviations or vicious positions of the hip. When it is performed on this indication in coxalgia, it gives excellent results and makes it possible to remove the plaster cast much sooner. In cases of infectious arthritis, particularly arthritis due to the gonococcus, arthrodesis is very beneficial and should not be delayed too long. The author has

never performed arthrodesis to stabilize a flail hip in paralysis and does not advocate its use for that purpose. He has performed arthrodesis in nineteen cases with no deaths and with perfect recovery in all. In young subjects in whom bone proliferation is still taking place, small pedicled grafts may be used, but in older subjects large solid grafts are necessary.

Too great laxity of the hip joint may be corrected either by forming an artificial roof over the head of the femur or by providing support for the pelvis on the upper end of the femur by means of osteotomy. An artificial roof may be formed over the subluxated head by means of grafts from the tibia or the crest of the ilium. The operation is shown by diagrams and the excellent end-results are shown by roentgenograms. This operation must be performed in several stages and requires several months, but is not followed by any shortening of the limb.

In subluxations the author has had excellent and lasting results from the use of Lance's graft. For stubborn unsupported luxations he prefers subtrochanteric osteotomy either alone or supplemented by grafting. He thinks osteotomy of the femur is the ideal procedure to bring about an articulation between the pelvis and the femur. The best method is a subtrochanteric or oblique osteotomy by Broca's technique. If the head is absolutely loose and floating from atrophy of the muscles, the osteotomy should be supplemented by a graft.

Before any operation is performed for the control of pain it is important to be certain that the pain is in the hip joint and not in the sacro-iliac or sacro-lumbar joints. The operations most commonly performed for the relief of pain are arthrodeses, supporting osteotomies, and grafting operations. The solid console or bracket graft recommended by Soutter is excellent. The author reports a case in which it was used.

In addition to these palliative operations there are two classes of operations designed to restore physiological movement of the joints. In those of the first class the normal form of the joint surfaces is restored. These procedures are employed in cases of deformity resulting from coxa vara and fractures of the neck of the femur. In operations of the second class the joint is entirely reconstructed by remodeling the joint surfaces and re-establishing their contact after the interposition of a living membrane. In four cases in which the author performed cancellous osteotomies the results were excellent. The cases in which he performed Whitman's operation were treated too recently for judgment of the end-results.

ANTONY GOSW MORGAN, M.D.

FRACTURES AND DISLOCATIONS

Newell, E. D.: The Treatment of Fractures by the General Surgeon. *J Am M Ass*, 932, 302, 4.

This article is based on 4,783 fractures treated during the past twelve years at the Newell Clinic and Hospital, Chattanooga, Tennessee. During this

time it was necessary to perform only 95 open operations to obtain satisfactory apposition of the fragments. Non-union occurred in only 3 cases, exclusive of those of fracture of the neck of the femur.

Medical and physical therapy were not used in any of the cases.

Of the 95 open operations, 23 were done for fractures of the radius and ulna and 23 for fractures of the patella.

An anæsthetic, either local or general, was used for all of the reductions.

Compound fractures are treated by thorough débridement and the use of Dakin's solution until the danger of infection is over. Adhesive strapping of the wound is then done to accomplish approximation. When the compounding is due to protrusion of the bone through the skin, débridement is not done, but the exposed ends are cleaned with ether before the fracture is reduced.

ROBERT V. FUNSTEN, M.D.

Bich, A. An Experimental Study of the Effect of Hot Mud Baths on the Healing of Fractures (*Studio sperimentale sull' azione del fango termale sulla guarigione delle fratture*) *Arch ital di chir*, 1932, xxxii, 488.

Many patients without the advice of physicians have presented themselves at various bath establishments for treatment to reduce the extent and duration of the common sequelæ of fractures such as rigidity, muscular atrophy, and pain. It has been found that hot mud baths have a beneficial action. They favor the development of a stronger and sometimes larger callus, exert a beneficial effect on the muscular tone, increase the alkalinity of the blood, mobilize the uric acid deposits in the tissues, and diminish calcæmia and glycæmia.

These effects depend on many factors. Heat alone, for example, favors callus formation. The action of radio-active substances depends upon the dosage, sometimes favoring and sometimes inhibiting callus formation. Alkalinization of the body favors the earlier and more abundant production of callus, whereas acidification results in the production of a firmer callus.

The author investigated the effect of mud baths on the healing of fractures of the fibula in rabbits. After an open osteotomy he studied the roentgen and histological findings following various periods of mud therapy. In the experimental animals the healing of the fractures was in general better than in the controls. The periosteal callus was more marked, the decalcification of the fracture fragments was less marked, and the medullary canal reformed more rapidly. When the mud baths were begun fifteen days after the fracture the time required for healing was about the same, but the resulting callus was firmer. It is entirely possible that all of these beneficial effects may be explained on the basis of the heat alone. The author suggests the use of such therapy, especially in delayed union.

A. LOUIS ROSE, M.D.

Bell, G. The Primary Treatment of Compound Fractures of the Lower Limb. *Med J Australia*, 1932, ii, 501.

The author discusses the primary treatment of compound fractures of the lower extremity with regard to the prevention of infection and reduction and splinting in the presence of possible infection. He emphasizes the importance of early treatment. First-aid treatment, he believes, should consist principally of adequate fixation. For fractures of the femur he recommends the Thomas knee splint or its modification with the half ring. Among the necessary first-aid measures are the combating of shock and the early administration of serum.

In the majority of cases the safest anæsthetic is ether, but when the patient is in severe shock the author prefers to use nitrous oxide and oxygen.

In the operating room, particular attention should be paid to the preliminary cleansing of the skin. The surgeon should err on the side of considering the wound contaminated and potentially infected. If the operation is done within a few hours after the injury and the wound is small, very little excision of tissue should be done, but if the wound is large the author believes that the damaged tissue should be excised *en bloc*, all parts of the wound should be coated with bipp, and the wound left wide open. Rough handling of the periosteum must be avoided. Completely detached bone fragments and muscle tissue which does not contract when touched with the dissecting forceps should be removed. Devitalized muscle is an excellent culture medium for the bacillus of gas gangrene. At the end of the operation it is of advantage to flush the wound with ether. If the bone ends can be engaged and locked in position, this should be done, but if the fracture is oblique or comminuted the bone ends may be reshaped with bone forceps and dovetailed with one another. Occasionally the use of a loop of kangaroo tendon or wire may be necessary as a temporary measure, but as a rule internal fixation by means of foreign material should be avoided. Lane plates should not be employed.

If amputation becomes necessary the author prefers the Stokes-Gritti operation for the thigh and a Syme amputation for the foot. In the case of the leg he amputates between the upper and middle third. He states that if the patient is desperately ill it is wiser to perform the guillotine amputation first and re-amputate at the site of election later.

In conclusion Bell says that the chief essentials in the management of compound fractures are the prevention of infection by early and efficient treatment of the wound and the avoidance of tight closure of the wound after fixation of the fracture.

PAUL C. COLONNA, M.D.

Anderson, R. The Well-Leg Countertraction Method. *Am J Surg*, 1932, xviii, 36.

Anderson describes the application of the well-leg countertraction splint in detail. The apparatus is adaptable particularly to fractures of the femur and

is used in practically all cases with a Steinmann pin through the tibia of the affected leg.

The splint accomplishes immediate reduction prevents prolonged shock, pain, and undue swelling, and allows free movement of the patient, thereby rendering prolonged rest in bed unnecessary and preventing hypostatic pneumonia. A cast is applied on the normal leg from the toes to the upper third of the thigh. The cast on the fractured leg extends to within 5 in. of the knee and incorporates the Steinmann pin. By means of the splint the pelvis is tilted in such a way as to bring the fractured leg into abduction and at the same time exert traction sufficient to reduce the fracture. Rotation also may be accomplished by the apparatus. The method is particularly valuable in the cases of elderly persons and feeblies and, during unconsciousness.

The author describes in detail its use in fractures of the neck of the femur, intertrochanteric fractures, subtrochanteric fractures, fractures of the shaft of the femur, fractures of the lower third of the femur, fractures of the pelvis, fractures of the tibia, mal-unions, non-unions, bone lengthening, operations on the hip, and reconstruction operations. The splint is available in two sizes.

The after-care of fractures is reduced by the use of the splint.

In conclusion the author gives the following rules:

1. Hold the normal leg in adduction; the hip while applying the cast.

2. Hold the normal foot at right angles and in slight valgus (eversion or pronation of the foot).

3. Pad the sole of the normal foot with thin, soft, flexible felt and a considerable amount of sheet wadding. Apply a 4-in. re-inforcement of plaster smoothly over the entire plantar surface of the cast on the normal foot and mould it accurately to the sole.

4. Cut sufficiently large openings in the cast over the malleoli of both the injured and the uninjured ankle before incorporating the splint.

5. Later cut the cast out over the posterolateral aspect of the head or heads of the fibula.

6. As pain or trouble in the normal leg is usually attributable to careless application of the cast, change the cast if the patient continues to complain of such disturbances. Pain in the region of the normal hip is usually indicative of too rapid or too much traction. In most cases the requisite amount of traction has usually been exerted when the lever arm is drawn down at a right angle with the longitudinal axis of the leg.

7. Avoid over-traction, especially in fractures of the femoral neck, by checking with repeated roentgenograms. Over-traction is a frequent cause of non-union.

8. Remember the warning of the Cooperative Committee on Fractures: "It is the doctor behind the splint and not the splint that counts in the treatment of fractures." ROBERT V. FOWLER, M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Frey, S True Diffuse Phlebarteriectasia (Ueber die genuine diffuse Phlebarteriectasie) *Deutsche Ztschr f Chir*, 1932, CCXXXVI, 480

True phlebarteriectasia, recognized since 1869, is very rare in its pure form Only twelve cases have been reported in the literature The condition is a dilatation of the arteries, capillaries, and veins of a circumscribed region. The clinical picture differs distinctly from that of aneurism formations or of arterial angiomata The dilatation develops in no definitely recognized manner, without trauma or any other known cause Primary congenital deficiencies or disturbances of the local vasomotor nerves with paralysis of the arterial vascular tonus are considered the most likely etiological possibilities Most often the upper extremity, especially the radial or ulnar vascular fields and occasionally both together, is involved The signs of the disease are purple discoloration of the involved region, sensory disturbances, sweating, nail deformities, thickening or lengthening of single fingers with refractory ulcers, bleeding, or even gangrene of these fingers Since temporary compression bandaging and constrictions do not bring about permanent cure, ligation of the smaller arteries supplying the vascular field involved (ulnar artery, radial artery) has been considered. Even this procedure does not always result in a permanent cure. In very severe cases, as a last resort, amputation of the affected extremity may be necessary
RIESS (Z)

Walker, A B Thrombophlebitis Migrans, with Notes of a Case *Lancet*, 1932, CCXXXII, 936

The author reports a case of thrombophlebitis migrans with severe and persistent headache, malaise, and pyrexia suggesting cerebral venous thrombosis and with the development of thrombophlebitis of the left lung, left leg, right lung, and left lung again in the order given He believes that the symptoms and signs in the right lung may have been due to the liberation of an embolus in the left leg by too vigorous massage He suggests that the main etiological factor in this condition may be a change in the chemicophysical composition of the venous blood.
JOHN H. GARLOCK, M.D

Kletz, N Thrombophlebitis Migrans *Lancet*, 1932, CCXXXII, 938

Kletz reports six cases of thrombophlebitis migrans, in some of which the use of bacillus coli vaccines was followed by improvement. He summarizes the clinical features of the condition as follows

1 A tendency to involve superficial veins, especially in the upper and lower extremities

2 A decided segmental distribution with healthy vein intervening

3 A progressive spread which is usually accompanied by moderate fever

4. A lesion having the appearance of an erythematous fusiform, nodular mass which is sensitive to the touch and may or may not be associated with edema
JOHN H. GARLOCK, M.D

Steinwendner, J The Pain Phenomenon in Ulcus Cruris (Die Schmerzphänomene beim Ulcus cruris) *Wien med Wchnschr.*, 1932, II, 1058

The pain of varicose ulcer of the leg by no means parallels the intensity of the objective findings, and is not so irregular and complicated as it appears In fact, the pain may be classified in a systematic fashion without difficulty In cases with similar objective findings the pain is very similar in intensity and time of appearance

Steinwendner distinguishes five groups of ulcer The first group includes the mildest cases with infiltration usually in the region of the malleolus with a darkly pigmented center and possibly a superficial, crusted erosion Patients with such ulcers seldom complain of pain during the day as the pain develops only toward evening after long periods of standing, with a moderate amount of swelling However, the pain and the swelling both disappear by the following morning

In the second group the pathological changes are more advanced and a distinct swelling in the malleolar region is nearly always present Patients with these ulcers suffer with particular intensity, the pain coming on during the day, becoming worse toward evening and preventing sleep for several hours It ceases again later in the night and by morning the swelling has disappeared

The third group manifests a two-phase sort of pain The patient arises in the morning free from suffering Soon pain begins, but early in the afternoon it ceases again In the evening the patient is able to get to sleep without discomfort, but after a few hours he is awakened by a new pain-phase which lasts until long after midnight After the pain ceases sleep is undisturbed for the rest of the night In these cases the objective findings are still further advanced The swelling is especially marked, but is so loosely constituted that it is completely removed by the rest in the horizontal position during the night During the day, swelling appears in a flood-tide fashion and during the night it ebbs away again There is a pain-phase as the swelling develops and another as it ebbs, a sort of tidal pain.

In the fourth group pain is less dominant It occurs practically only during the early morning hours and may be cut short by the upright position.

In these cases the leg is still swollen in the morning as the transfection has the character of a hard edema which can no longer be resorbed by the body in the course of a single night's rest.

In the last group with the advanced objective findings familiar to everyone there is no longer pain and the dense edematous swelling varies little.

The author explains the contradictory behavior of the pain by assuming that an ulcer in the areas which are at rest does not of itself produce pain. It is only when an alteration of the tissue pressure occurs, such a change from a lower to a higher pressure or the opposite that pain is produced. The swelling of the soft parts by pulling and stretching the floor of the ulcer induces first a state of hyperesthesia, but with further development of the swelling and increase in the tissue pressure an anesthetic stage is finally brought on. Upon diminution of the swelling the hyperesthetic phase recurs with recurrence of the pain. DUBROV (Z)

BLOOD; TRANSFUSION

Goerdel, D.: Essential Thrombopenia. An Experimental Study of the Effect of Splenectomy on the Bone Marrow and the Thrombocyte Count (Ueber die essentielle Thrombopenie. Ein experimenteller Beitrag zur Wirkung der Entzahnung auf das Knochenmark und die Zahl der Blutplättchen). *Arch. f. path. Anat.* 123, October 1917

The authors had the opportunity to make a histological examination in three cases of essential thrombopenia. The bone marrow was examined in only one case, but the extirpated spleen was studied in all three. The spleen showed no macroscopic nor microscopic changes whatsoever. In one case which terminated fatally the splenic pulp contained blood platelets. However this was not regarded as of any significance as even under normal conditions blood platelets are destroyed in the spleen. The changes found in the megakaryocytes of the bone marrow were not sufficiently pronounced to permit definite conclusions. However in two cases of symptomatic thrombopenia in subleukemic and leukemic lymphadenosis the megakaryocytes of the bone marrow were markedly damaged and the deficiency of blood platelets, which are a product of the megakaryocytes, was believed to be a result of the damage.

The authors continued their investigation by animal experiments. They attempted to determine what changes the removal of the spleen caused in the number of platelets and on their sites of formation, the megakaryocytes. Two rabbits were used with four more to serve as controls. One invariable finding after splenectomy was a temporary increase in the thrombocyte count. The maximum of this rise was reached from the fourth to the eighth day. The number of red blood corpuscles also rose after the primary fall caused by loss of blood during the operation. However, the number of thrombocytes was in no way related to the number of erythrocytes.

The authors studied also the bone marrow of the experimental animals. They found three kinds of changes in the megakaryocytes. First, the size and shape of the megakaryocytes were changed, frequently they resembled the pyramidal cells of the brain, except that the foot-like prolongations were short and thick. Second, the protoplasm was considerably altered. The normal granulation had receded considerably remaining only in the immediate neighborhood of the nucleus, and definite vacuoles appeared in the protoplasm. Third, the nucleus was involved. It appeared to be swollen, contained vacuoles, and its chromatin structure was looser. Free blood platelets were found in only small numbers.

The increase of thrombocytes obtained after splenectomy which in some cases, reached three times the normal number neither proved nor disproved the theory that the spleen has a thrombocytolytic effect. Neither did it demonstrate the abolition of some distant inhibitory effect of the spleen as the number of thrombocytes in the bone marrow proper before and after the splenectomy was the same. To prove that the spleen has an inhibitory effect an actively increased new formation of platelets in the megakaryocytes would have to be demonstrated. The changes observed in the megakaryocytes were regressive, not proliferative. The investigation was terminated without solving the problems. MAX BOONE (Z)

Hesse, E., and Filatov A.: Clinical Contributions to the Question of Blood Transfusion, Based on 844 Cases (Klinische Beiträge zur Frage der Bluttransfusion auf Grund eines 844 Fälle an der Fackel). *Vorhandl. d. 22. russ. Chir. Kongr.* Moscow 1913

The early development of blood transfusion in the Soviet Union took place in Leningrad in the clinics of Fedorov (Semenov, Elanaki) and of Hesse (Hesse, Maspan, Filatov). Since October 1, 1911 there has existed in the First Surgical Clinic of Hesse a Health Department station for blood transfusion. On May 1912 this was changed to a Transfusion Institute under the supervision of the Health Department. The material of the clinic in the period from 1912 to 1913 reached a total of 844 cases. Sixty of these cases are not included in this report because they were handled on the outside and were not adequately evaluated for scientific purposes.

In 200 of the 844 cases the citrate method of transfusion was used, and in 344 (57 per cent) the direct method.

In war emergencies and in small communities in the country the citrate method is to be preferred. For direct transfusion the apparatus of Ohlecker and Beck are employed. Since 1913 an apparatus for blood transfusion cleverly constructed by Landsberg has been used in the Leningrad Institute. Fifty-two blood transfusions have been given with the Landsberg apparatus. This simple method is warmly recommended.

Of the 604 cases in the clinic, transfusion was done in 94 because of hæmorrhage—acute hæmorrhage in 64 and chronic hæmorrhage in 30. In 35 cases re-infusion of blood lost in abdominal cavities was done. Most of these were cases of bleeding from tubal pregnancy or injuries of the liver or spleen. In the cases of chronic hæmorrhages, transfusion was done most often for gastric bleeding. It was done also for bleeding from the nose, hæmorrhoids, uterus, and urinary bladder. Of the 94 cases, an excellent result was obtained in 82 (87.2 per cent). In many cases the transfusion saved life.

In 171 cases transfusion was done to increase resistance before or after a major operation. It was done most frequently in cases of gastric resection (62 cases), but was carried out also in cases of resection of the colon, cholecystectomy, and operation for tumor of the cerebellopontine angle. The results were very good. In 125 (73 per cent) of the 171 cases the transfusion had a marked effect, all of the patients withstood the operation well. In 34 cases no operative shock was apparent, but the patients died later from pneumonia or peritonitis. In 12 (7 per cent) of the cases the transfusion had no effect.

In the active treatment of shock the authors have found transfusion of doubtful value. Of 33 cases, it had a marked effect in only 7 and only a slight effect in 12, and in 14 cases the patient died in shock.

In 44 cases transfusion was given for disease of the blood-forming organs. In 21 cases the indication was pernicious anæmia. The results were variable. In 14 cases they were excellent although often transitory, and in 17 cases slight. In 13 cases the transfusion was without effect. Among the latter, however, were 8 cases of leukaemia in which transfusion was done only because of urgent demands from the outside. In leukaemia, blood transfusion is useless.

Ninety-five transfusions were given to induce hæmostasis. The most frequent indication was gastric or intestinal bleeding. Good results were obtained in bleeding associated with typhoid fever, and good but temporary results in hæmophilia. Of the 95 cases, excellent results were obtained in 59 (62 per cent), a decrease in the bleeding in 18, and no result in 18 (18.8 per cent).

To increase coagulation and prevent cholæmic hæmorrhage, 37 transfusions were given. Operation (cholecystectomy or choledochotomy) was done in all. In 33 cases there was no bleeding. In 4, bleeding occurred, and in 2 it was fatal. This is unquestionably an improvement over previous results.

Transfusion was done 48 times for generalized infection. The authors are not very enthusiastic over the results. In 13 cases no effect was noted. In 30 cases there was some improvement, but in only 5 (16.7 per cent) were good results obtained. However, in the spring of 1932 the clinic changed over to the use of immunized serum.

Transfusion was done in 21 cases of poisoning. These cases were unusually severe. Two of 9 patients with apparently fatal potassium chloride poisoning were saved. In 3 cases the poisoning was due

to a narcotic, and in 1 case it followed the intravenous injection of hedonal. In spite of apparently beginning death, the patients were saved. Transfusion is indicated also in poisoning due to inhalation narcosis.

In 31 cases of carcinoma cachexia, transfusion was done with the hope of rendering the patient able to withstand operation. In only 4 cases was it successful.

In 30 cases transfusion was done for indications such as burns, scurvy, tuberculosis, and ileus intoxication. In extensive burns no result has been obtained as yet, but attempts are being continued as theoretically this treatment seems very promising.

E. HESSE (Z)

Hesse, E., and Filatov, A. *Experimental Investigations Regarding the Question of Hæmolysis in Blood Transfusions* (Experimentelle Untersuchungen zur Frage der Hæmolysse bei der Bluttransfusion). *Verhandl. d. 22. russ. Chir.-Kong.*, Moscow, 1932.

The danger of hæmolysis in blood transfusion is undoubtedly of practical importance. In the literature numerous cases of transfusion followed by hæmolysis are recorded. In Leningrad several cases were seen during the past six months and 2 of them were fatal. Death from hæmolysis occurred also in 1 of 604 cases seen in the clinic in 1928.

The authors have been making experimental investigations of the nature of this hæmolysis and the possibility of treating it. The literature presents nothing regarding treatment, and apparently very little is attempted by any one. The experiments of Hesse and Filatov are a continuation of the work done by Filatov in the laboratory of Amickov where he found that the introduction of hæmolytic autogenous blood into an animal caused a fall in the blood pressure and a decrease in the size of the kidneys. The latter was explained by spasm of the renal arteries. By denervation of the kidneys it was found that the spasm is of central origin.

With these facts in mind the authors carried out a series of experiments on dogs in which infusions of hæmolytic and heterogenous (human) blood were employed. The blood pressure in the femoral artery and the size of the kidneys were measured oncometrically and oncographically. The introduction of the hæmolytic and still more markedly incompatible blood led to a decided fall in the blood pressure and spasm of the renal arteries. The drop in the blood pressure was quickly overcome, but the spasm of the renal vessels persisted for from one to twenty-five minutes according to the amount of blood introduced.

It is well known that prolonged anæmia of the kidney leads to dysfunction of the organ, and that after the injection of a sufficient amount of heterogenous blood death will occur from oliguria, anuria, or hæmoglobinuria. The pains in the lumbar region which follow hæmolysis and are frequently misinterpreted or disregarded are due to spasm of the renal arteries.

In the cases of 8 dogs the authors carried out experiments in which they caused hemolysis artificially and at the same time did a unilateral denervation of the kidney. It was found that after simultaneous partial denervation the spasm of the renal vessels was much less severe and of shorter duration, and that after total denervation there was no spasm of the vessels of the denervated organ following the injection of incompatible blood although the drop in the blood pressure was not affected.

As treatment to relieve this condition in the dogs studied various procedures were tried. The infusion of a physiological solution of sodium chloride had no effect at all. The spasm of the kidney persisted. The infusion of a hypertonic solution aggravated the condition. However following the introduction of fresh blood of the same type the blood pressure rose and the spasm of the renal vessels ceased, an observation which may have a practical application. It was demonstrated also that hemolytic blood several days old was considerably less toxic and caused a less marked reduction of the blood pressure and less marked spasm of the renal vessels than fresh hemolytic blood. From this fact the authors conclude that preserved blood is less dangerous as regards possible hemolysis than fresh blood. The histological examinations of Lewin of Hesse's clinic revealed that the statements made by some regarding signs of thrombosis and embolism in hemolysis and the appearance of haemoglobin crystals in the urinary tubules are incorrect. Such a purely mechanical explanation is to be rejected. In early cases only a swelling of the parenchyma and glomeruli was observed.

From the findings herewith reported the authors draw the following conclusions:

As death from hemolysis is due chiefly to the exclusion of kidney function, all efforts should be directed toward overcoming the spasm of the renal vessels which is responsible for the clinical symptoms. Accordingly the following measures are indicated:

1. The infusion of compatible blood immediately after the appearance of signs of hemolysis following the infusion of hemolytic incompatible blood. As there is no time to obtain a donor belonging to the same blood group as the patient, every institution in which large numbers of blood transfusions are given should have a daily supply of preserved blood belonging to Group O. A transfusion of this blood should be given immediately.

2. An immediate complete denervation of the kidney a periaarterial sympathectomy on the renal artery to relieve the spasm of the renal vessels. Theoretically unilateral denervation should be sufficient to save life. The authors consider this procedure justified. While in cases of severe disease it may be too much for the patient, in moderately severe cases it will undoubtedly be safe. It can be performed under local anesthesia.

The decapsulation of the kidney advocated by American surgeons on empirical grounds should not

be employed as it is comparable at best only to a partial denervation and therefore is of little value.

The authors observed a case of hemolysis following blood transfusion which was unsuccessfully treated in the late stage (fourth day) by decapsulation of the kidney.

E. Hesse (2)

LYMPH GLANDS AND LYMPHATIC VESSELS

Schwartz, E.: The Lymphatic Reaction (Die lymphatische Reaktion). *Ergebn. Path.* 1934, xvii, 7.

At this time when the study of the blood picture has become indispensable in all of the branches of medicine, striking findings are made in the most varying diseases. Among such phenomena is the lymphatic reaction, for the conception of which we are indebted to Tuerck. According to Tuerck, the lymphatic reaction is the unexpected appearance of a lymphocytosis in infectious diseases which usually show a neutrophilic leucocytosis. Tuerck saw its cause in a degeneration of the granulocyte apparatus, and its mechanism in a substitution on the part of the lymphatic apparatus with the formation of an increased number of lymphocytes which are washed out into the blood stream. The resulting condition frequently shows peculiarities which render it different from the ordinary lymphocytosis. Large, more or less immature or atypical cells with a tendency toward plasma-cell change predominate. Nevertheless Tuerck and subsequent investigators found no morphological grounds sufficient for use of the term "lymphatic reaction." The uncertainty as to the origin and significance of this striking phenomenon is evidenced most forcibly by the great number of different names applied to it in the literature. The variety of the clinical and hematological character lacks excuses the uncertainty that prevails even today. The study of many individual cases has shown only that at the present time we must be resigned to the abandonment of all hypotheses because of our lack of knowledge.

Of chief interest to the surgeon are cases of lymphatic reaction in general sepsis. Of these, only a small group come into consideration, those in which the septic infection is assumed to be the only cause of the disease. By far the greatest number are specific infections, in which the lymphocytic blood picture shows nothing unusual.

Of decisive importance is the character of the lymphocytes as described originally. The chief lymphatic reactions are those of the so-called monocytic anginas. On the basis of the blood picture they may be subdivided into a group with a pure lymphocytosis, even though very often showing immature forms, and a group with a more marked appearance of true monocytes. The fact that pictures of pure lymphocytosis are found very rarely and examination frequently reveals intermediate forms which cannot be differentiated with certainty by either the numerical relationships or the habits of the predominating cells suggests that these are only different forms of the same disease.

In regard to the clinical aspect and pathology of the anginas with a lymphatic reaction it may be said that young persons are affected almost exclusively. This fact differentiates these anginas from the ordinary leucocytic anginas and suggests special relationships of immunity which are encountered in all of the so-called children's diseases. Almost always the disease begins with a premonitory symptom (malaise, pallor, lassitude) and the course of the tonsillitis is of very long duration. The outstanding characteristic is the involvement of the lymphatic system in its entirety, not only the adjacent lymph nodes. The general adenopathy, the frequently varying sequence of events in its development, and the enlargement of the spleen which is often found can be explained only by dissemination by way of the blood stream. The liver also is found enlarged. Neither the local form of the anginas nor the very varied forms of fungi found in the clefts of the tonsils can be held responsible for the lymphatic reaction.

The frequently assumed relationship between the lymphatic reaction and the constitution is refuted by our knowledge of specific lymphotropic disease excitants. There is no status lymphaticus in the sense of a predisposing hyperplasia and preparedness of the lymphatic system, and in status hypoplasticus there is no lymphatic reaction to leucotactic stimuli. The lymphatic and monocytic reaction in angina is due most probably to a lymphotropic excitant identical with that of glandular fever. The observations on the lymphatic reaction in non-septic diseases, such as grippe, pneumonia, tuberculosis, scarlet fever, varicella, mumps, and typhoid fever, as well as in poisonings due to such substances as salvarsan and mercury are still much too inadequate to aid in explaining the lymphatic reaction. The causes of the lymphatic reaction in the individual case can hardly be sought in general conditions. Undoubtedly, many intricate and varied causes are involved.

DRUEGG (Z)

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Potts, W. H., Jr.: Oxygen Therapy—A Critical Review. *Am J Med Sci.* 1912, directv 616.

The purpose of this article is to discuss the status of oxygen therapy after a ten-year probation period.

The primary purpose of oxygen therapy is the combating of anoxemia.

The most frequent argument used against oxygen therapy is the absence of statistics showing a decrease in the death rate of treated patients as compared with untreated patients. These statistics are difficult to obtain. The use of oxygen should be looked upon as an aid in the treatment of pneumonia, and not as a specific measure.

The oxygen content of mixtures of arterial and venous blood is determined by the usual gasometric technique. A portion of the blood is then saturated with oxygen and the total oxygen capacity is determined. Thus are obtained: (1) the arterial oxygen content (cubic centimeters of oxygen combined with hemoglobin per 100 ccm. of arterial blood) (2) the venous oxygen content (a similar value for venous blood) and (3) the total oxygen capacity (cubic centimeters of oxygen combined with the hemoglobin of 100 ccm. of blood when fully saturated).

The difference between the oxygen content and the total oxygen capacity has been called the "oxygen unsaturation." This may be expressed either as cubic centimeters of oxygen per 100 ccm of blood or in percentage of the total oxygen capacity. The oxygen consumption is the difference between the arterial and venous oxygen content. A method for determining the oxygen tension in the tissues, a factor of utmost importance, is not yet available.

"Anoxemia" and "cyanosis" are not synonymous terms, but for practical purposes we are obliged to rely on the degree of cyanosis as an index of anoxemia and for the indications for oxygen therapy.

The most constant and frequent site of cyanosis was found to be in the end of the finger especially under the nail. Next to the finger the face showed cyanosis most commonly. Irreparable toxic changes which may occur in vital neural cells in the presence of anoxemia may be prevented by the use of oxygen.

Anoxemia of rapid onset causes loss of consciousness without warning. When anoxemia develops gradually, the intellect and the senses become dulled without the person being aware of it.

Symptoms similar to those resulting from an overdose of alcohol may be present, such as headache, depression, apathy and drowsiness or excitement and general loss of self-control. Palfin has shown that the symptoms of acute alcoholism may

be completely suppressed by the breathing of pure oxygen. The delirium so frequently associated with pneumonia is usually attributed to fever and intoxication, but may possibly be a symptom of anoxemia.

A normal individual at rest uses about one fifth of the available oxygen. In disease states the oxygen requirements of the tissues increases rapidly and the vital capacity of the lungs may be reduced relative to the area of consolidation with its associated edema and inflammatory reaction. As increased pulse rate and an increased oxygen capacity of the blood help to compensate for this condition. The available oxygen in the air remains constant. The respiratory rate increases, but the amount of air taken in per breath is limited to the vital capacity. The more rapid the respirations the shallower they must be. The most logical method of breaking this vicious circle is increasing the oxygen concentration of the inspired air and thus the available oxygen per unit of air.

Inadequate oxygenation in pneumonia may be caused by

Failure of adequate ventilation due simply to rapid, shallow breathing.

Some intrinsic alveolar disturbances due to such factors as (a) mechanical interference by intra-alveolar exudate of sufficient quantity as to prevent access of air which, with intact circulation, allows unsaturated blood to return to the systemic circulation (b) dysfunction of alveolar membranes due to edema and fatty infiltration (c) interference with the circulation in the alveolar walls brought about by the formation of fibrin plugs within the capillaries. If this interference were extensive enough it would hasten the blood flow through the remaining vascular channels, thereby shortening the contact between the blood and air.

3. The tautomeric changes in the circulating blood due to changes in the behavior of hemoglobin with the formation, for example, of methemoglobin.

4. Intrinsic tissue disturbances.

The literature on oxygen therapy contains so convincing evidence that any harmful effects attributable to oxygen itself have ever come from even continuous exposure of anoxemic or potentially anoxemic individuals to atmospheres with a 40 to 60 per cent content of oxygen for periods of as long as two months, except in conditions of chronic anoxemia such as chronic pulmonary disease and congenital heart disease in which the factor of acidmiation has entered.

At present it is believed that the optimum concentration of oxygen is between 40 and 60 per cent. A concentration of less than 30 per cent rarely has any value. A concentration of from 30 to 35 per cent lessens cyanosis and increases the arterial

oxygen saturation The pulse rate is the most reliable single guide by which to judge benefit or failure from oxygen therapy

Oxygen therapy is indicated in both lobar and bronchopneumonia It decreases the discomfort by making breathing easier, it slows the pulse and, at times, the respirations, and it often lowers the temperature It increases the arterial oxygen saturation and relieves cyanosis, and it often prolongs life until the immunity mechanism can achieve recovery

With regard to the use of oxygen in heart disease Barach says, "The most interesting and striking effects of oxygen therapy in the cases of cardiac insufficiency are (1) relief of dyspnoea and orthopnoea (2) elevation of the arterial carbon dioxide content and of the level of the carbon dioxide dissociation curves, and (3) diuresis"

In coronary thrombosis acute oxygen want is manifested by both arterial and venous anoxæmia Oxygen therapy in a concentration of from 40 to 60 per cent has aided in maintaining an adequate oxygen supply to the tissues of the body until the heart has had an opportunity to recover from its acute functional disturbance Barach reports good results from the use of 50 per cent oxygen in cases of arteriosclerosis of the coronary vessels

Oxygen therapy has been used also in asthma, hyperthyroidism, asphyxia, influenza, certain neuropsychiatric conditions, epilepsy, chronic arthritis, sepsis, diabetes mellitus, burns, and hypertension

Judd and Passalacqua have reported 180 unselected surgical cases in which oxygen without carbon dioxide was administered as a prophylactic against pneumonia immediately after operation, or as soon as the signs and symptoms of pulmonary congestion were recognized clinically, or after the classical signs of pneumonia were present In the cases in which it was used immediately after operation or as soon as there was clinical evidence of pulmonary congestion, pneumonia did not occur, and in those in which it was used after the development of pneumonia there were no deaths

Experimental pneumococcal pneumonia has been cured with carbon dioxide Henderson believes that in all pneumonias the use of carbon dioxide and oxygen permits the freer use of morphine to counteract excitement and restlessness

In conclusion Potts says that oxygen has become definitely established in our therapeutic armamentarium In conditions associated with anoxæmia, the use of oxygen must find its place It must be given a trial in serious heart and pulmonary conditions That carbon dioxide will supplement oxygen seems possible.

NORMAN C BULLOCK, M.D

Dahl-Iversen, E, and Ramberg, E Researches on Postoperative Phlebitis, Thrombosis and Embolism (Recherches sur les phlébites, les thromboses et les embolies postopératoires) *Lyon chir*, 1932, **xxi**, 299

The authors' research was based on 18,168 patients operated upon at the Municipal Hospital of Copen-

hagen in the period from 1911 to 1930 Of this number, 636 (3.5 per cent) developed postoperative phlebitis, thrombosis, or embolism Cases in which these complications occurred in association with septic and pyæmia conditions are excluded The incidence of the complications according to the type of operation and according to sex is shown in the following table

Operations*	1911-1930	No of thromboses and embolisms	%	Males	Females
Group A	7,147	442	6.18	144	298
Group B	6,115	36	0.59	8	28
Group C	2,472	51	2.06	16	35
Group D	832	51	6.13	37	14
Group E	1,602	56	3.50	32	24
Total	18,168	636	3.69	237	399

*Group A Laparotomies Group B operations on the external genitals, perineum, anus, and vagina, amputations of the cervix, and vaginal hysterectomies Group C operations on the neck, trunk, and extremities Group D operations on the kidneys, bladder and prostate Group E herniotomies

As has been demonstrated by others, this table shows that the incidence of postoperative thrombosis and embolism is highest after laparotomies and operations on the kidneys, bladder, and prostate

Factors of importance in the occurrence of these complications are age, the state of nutrition, and the condition of the circulation A curve based on five-year periods shows that the incidence of the complications increased rapidly from the age period between sixteen and twenty years to the age period between thirty-six and forty years, then remained at about the maximum level to the age period between sixty-one and sixty-five years, and then rapidly decreased In the cases of the males, it increased from the age period between sixteen and twenty years to the age period between sixty-one and sixty-five years, whereas in the cases of the females it increased more rapidly up to the age period between twenty-six and thirty years, remained at the maximum to the age period between forty-six and fifty years, and then decreased

The state of nutrition was recorded in the cases of 258 of the 626 patients One hundred and twenty-eight of the 258 were obese and 59 were thin

Of the 429 cases in which the state of the circulation was recorded, circulatory disturbances were absent in 240 but varices were present in 106, cardiac disturbances in 47, and circulatory disturbances due to pulmonary, vascular, and other conditions in 36

Among other factors to which postoperative phlebitis, thrombosis, and embolism have been attributed are infection, drainage and lack of drainage, the type of anaesthesia, and the season of the year

Of the 636 cases reviewed by the authors, the complications followed a septic operation in 183 cases and an aseptic operation in 453 In 44 per cent it developed after drainage In from 3 to 4 per cent of the cases it occurred after the use of general anaesthesia, and in 2.5 per cent after the use of local or spinal anaesthesia It was least frequent in the months of December, January, and April, and

most frequent in February August, September October and November.

In 70 per cent of the cases the complications developed during the first two weeks after the operation. It was most common between the fourth and eighth days.

As a rule the temperature and pulse increase after the occurrence of embolism. To determine whether a change in the temperature and pulse occurs before the occurrence of pulmonary infarction or fatal embolism of the pulmonary artery the authors studied the records of 172 cases. They found that pulmonary infarction was preceded by an increase in the temperature and pulse or of the pulse alone in only 21 per cent of the cases, and fatal pulmonary embolism was preceded by such an increase in only 27 per cent. The increase in the pulse before the development of fatal infarction or embolism showed a more or less characteristic rise by stages (sign of Mahler).

Embolism occurred without thrombosis demonstrable clinically or at autopsy in 44 per cent of the cases, and thrombosis without embolism in about 33 per cent. In one-fifth of the cases it was possible to discover the thrombosis which was the source of the embolus.

Localization of the thrombosis in the veins of the pelvis and abdomen was nearly always found at autopsy. In 33 per cent of the cases there were multiple localizations.

Ninety-five patients died of embolism of the pulmonary artery. These constituted 0.5 per cent of the 18,163 patients operated upon. In 45 (47 per cent) the embolism occurred suddenly without a premonitory thrombosis, phlebitis, or infarction. In 3 it was of the syncopal form, and in the rest of the suffocative form.

The incidence of embolism of the pulmonary artery according to the type of operation and according to sex was as follows:

Operations	Males	Females	Total
Group A	24	3	26
Group B	3		3
Group C	4	8	12
Group D	4		4
Group E	6	2	8
Total	5	44	93

Pulmonary infarction occurred in 357 cases (153 males, 204 females) and with about equal frequency in both lungs. In 57 cases it occurred in both lungs.

To determine whether postoperative phlebitis, thrombosis, and embolism have increased in frequency the authors plotted curves based on the incidence of these conditions per 100 operations in each year of the period from 1915 to 1930. From these curves they conclude that there was no increase in the twenty year period.

Following their statistical study the authors review the literature on the relationship of changes in the composition and circulation of the blood and in the

walls of the blood vessels to the occurrence of postoperative thrombosis.

They next discuss the various measures which have been suggested or used for the prevention of postoperative thrombosis. They emphasize first the importance, at operation, of keeping the destruction of cells at the minimum by careful hemostasis, the avoidance of confusion of the tissues, and care to limit as much as possible the amount of tissue included in ligatures. They state that while the treatment of cardiac and circulatory disturbances with digitalin and vascular tonics is important, the advisability of pre-operative digitalization of the normal heart is doubtful. The value of the administration of thyroid substance is also doubtful as the observations reported do not agree and the favorable observations published are too few to rule out chance. The application of leeches to influence the circulating blood has been proved of no prophylactic value. If we accept the promises of research on germanium, it is impossible to influence the blood by the drugs as yet available.

The best pre-operative and postoperative prophylactic treatment consists in measures to decrease the loss of fluids from the organism, the avoidance of nuclear starvation, the administration of large quantities of fluid, respiratory exercises, movements in bed, dressings which compress the lower extremities, and elevation of the foot of the bed to activate the venous flow. In suspected cases these may be supplemented by venesection or the administration of germanium.

JAMES B. MASON, M.D.

Kimbarovski, JI. Early Arising and Postoperative Pneumonia (Frühauftreten und postoperative Pneumonie). *Sowjet. chir.* 1932, 2, 103.

Kimbarovski compares the incidence of pulmonary complications in 403 cases treated surgically in the period from 1927 to 1928, in which the patients were kept flat on their backs for a considerable time after the operation, and a series of 312 cases treated surgically in the period from 1929 to 1931 in which the patients were allowed out of bed early. In the first group the incidence of pulmonary complications was 4.62 per cent (stomach operations, 12.5 per cent; appendix operations, 7.5 per cent; operations for hernia, 6.0 per cent; laparotomies, 5.0 per cent; urological operations, 4.5 per cent; and gynecological operations, 4.5 per cent). In the second group it was only 0.74 per cent (stomach operations, including 500 resections, 2.3 per cent; appendix operations, 0.4 per cent; laparotomies, 0.4 per cent; urological operations, 3.3 per cent; and gynecological operations, 1.1 per cent).

The author believes that the enormous difference was due entirely to the early rising and active post-operative treatment in the second series. He attributes postoperative pulmonary complications chiefly to prolonged supine position, diminished heart activity, pulmonary collapse, and psychic disturbances. Early rising tends to prevent the oc-

currence of thromboses, emhoh, lung complications, meteorism, and urinary retention, improves the psychic, shortens the period of hospitalization, and reduces the work of the nursing personnel.

REINBERG (Z)

ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Jellinek, S. Electrical Injuries. Clinical Picture and Histopathology (Elektrische Verletzungen Klinik und Histopathologie) 1932 Leipzig, Barth

This book is based on an experience of thirty years in electropathology, including the treatment of thousands of cases of electrical injuries and hundreds of autopsies.

It was previously the custom to describe all electrical injuries without distinction as "electrical burns." Amputations were performed too often, and because of a lack of pathologico-anatomical knowledge with respect to the internal organs, the full gravity of threatening symptoms was frequently not recognized. Autopsies usually yielded negative findings. It was a circumstance favorable to this young science that the university medical clinics and the institutes for medical research were concentrated in the General Hospital of Vienna, and that physicians representing all of the specialties were available. Jellinek set himself the task of discovering a regulating principle, of establishing disease types, and of testing out therapeutic measures on the basis of the pathologico-anatomical findings of experimental research. The results of his endeavors are reported in this monograph.

In the practical applications of electricity, voltages up to 500 volts are known as "low voltages" and voltages of 1,000 volts and over are known as "high voltages," the former with direct current and the latter with alternating currents. These designations of high and low voltage are of practical importance with respect to safety measures to be taken, but are without importance in the investigation of disease conditions or the kinds of death caused by electricity. Differentiations on essential grounds cannot be made between the effects of high and low voltage currents, at least insofar as the general condition is concerned. The human body cannot be regarded simply as ohm resistance. By virtue of its polarization capacity, its condenser action, and its action as electrolyte and as a transformer of energy, it is a highly complicated structure. The destructive effect of the electrical current increases with the length of time the current acts on the body, but it is not possible to establish any rules for the evaluation of the time factor. "Only under the influence of high voltage can the voltaic arc break through and cause instantaneously, independently of any time measurement, injuries of the severest nature, affecting even the bone system." The theory that the electrical current is most dangerous when it enters the body through the left hand is refuted by the fact that the blood channels, all of which lead to the heart, are

the best conductors of current. No decisive importance can be attached to the path of the current alone. The author supports this assertion by citing a number of cases of electrical injury. On the other hand, the resistance of the skin plays an important rôle. "Workmen who have a firm dry skin over the balls of their fingers can touch the bare ends of the wires of a 100-volt grill without even being made aware of the current." Although in general tolerance is considerable, the physical constitution and psychic makeup play a certain part. Strangely enough, pregnancy seems to increase resistance, also alert attention and readiness to receive the current (Strombereitschaft). Electrical injury is a *laesio sui generis* which often shows no relationship to a burn. This is emphasized repeatedly and insistently.

The author distinguishes between the marks of the current, mixed forms, and electrical burns. The mark of the current, i.e., the electrical injury, is painless and remains for days and weeks without any traumatic reaction. If it is of a superficial nature it falls out after a certain time. If it extends deeper, the rule is that after the lapse of days or weeks "the dimensions of this injury often increase to double or more" without any inflammatory phenomena, disturbance of the general health, or subjective symptoms. Electrical burns are painful even when they are very small. They tend to be accompanied by inflammation and infection and by swelling of the regional lymph glands.

In addition to these forms of injury, electromechanical injuries in the form of incised wounds and burns are described in detail. In the mixed types, calcium phosphate dissolved out from the bones is often found in the form of pearls. Electrical metalization, electrochemical changes, electrical oedema, electrical discharge of fluid from the tissues, the branched figures produced on the skin by lightning, and immediate necroses are discussed with the aid of illustrations.

Of particular interest to the surgeon is electrical bone fissure. Often not until after a period of months does the roentgenogram show a demarcation line passing through the peripheral portion of the bone or entirely through the bone in a transverse direction and marking the area of a later sequestration or the site of a later spontaneous amputation. Bone reaction, osteophyte formation, and thickening of the periosteum are as a rule absent. "The benign character of injuries and destructive processes caused by electricity is shown also when joints, large or small, are involved. They heal without infection and without suppuration, as is the rule also in the case of bone lesions." Hence Jellinek's demand for conservative treatment in cases in which amputation was done formerly. However, acute hæmorrhages within necrotic areas must be attended to. Ligation should always be done at a distance from the site and far central to it. When the general condition becomes worse and is not improved by lumbar puncture, venesection, or internal medication, amputation is indicated and often saves life.

most frequent in February August September October and November.

In 70 per cent of the cases the complications developed during the first two weeks after the operation. It was most common between the fourth and eighth days.

As a rule the temperature and pulse increase after the occurrence of embolism. To determine whether a change in the temperature and pulse occurs before the occurrence of pulmonary infarction or fatal embolism of the pulmonary artery the authors studied the records of 132 cases. They found that pulmonary infarction was preceded by an increase in the temperature and pulse or of the pulse alone in only 31 per cent of the cases, and fatal pulmonary embolism was preceded by such an increase in only 37 per cent. The increase in the pulse before the development of fatal infarction or embolism showed a more or less characteristic rise by stages (sign of Mahler).

Embolism occurred without thrombosis demonstrable clinically or at autopsy in 44 per cent of the cases, and thrombosis without embolism in about 33 per cent. In one-fifth of the cases it was possible to discover the thrombosis which was the source of the embolus.

Localization of the thrombosis in the veins of the pelvis and abdomen was nearly always found at autopsy. In 23 per cent of the cases there were multiple localizations.

Ninety-five patients died of embolism of the pulmonary artery. These constituted 0.52 per cent of the 18,168 patients operated upon. In 45 (47 per cent) the embolism occurred suddenly without a preliminary thrombosis, phlebitis, or infarction. In 5 it was of the syncopal form, and in the rest of the suffocative form.

The incidence of embolism of the pulmonary artery according to the type of operation and according to sex was as follows:

Operations	Males	Females	Total
Group A	14	11	25
Group B	3	1	4
Group C	4	3	7
Group D	1	1	2
Group E	1	1	2
Total	24	27	51

Pulmonary infarction occurred in 157 cases (153 males, 4 females) and with about equal frequency in both lungs. In 57 cases it occurred in both lungs.

To determine whether postoperative phlebitis, thrombosis, and embolism have increased in frequency the authors plotted curves based on the incidence of these conditions per 100 operations in each year of the period from 1911 to 1930. From these curves they conclude that there was an increase in the twenty-year period.

Following their statistical study the authors review the literature on the relationship of changes in the composition and circulation of the blood and in the

walls of the blood vessels to the occurrence of postoperative thrombosis.

They next discuss the various measures which have been suggested or used for the prevention of postoperative thrombosis. They emphasize first the importance, at operation, of keeping the destruction of cells at the minimum by careful hemostasis, the avoidance of contusion of the tissues, and care to limit as much as possible the amount of time included in ligatures. They state that while the treatment of cardiac and circulatory disturbances with digitalis and vascular tonics is important, the advisability of pre-operative digitalization of the normal heart is doubtful. The value of the stabilization of thyroid substance is also doubtful as the observations reported do not agree and the favorable observations published are too few to rule out chance. The application of leeches to influence the circulating blood has been proved of no prophylactic value. If we except the promises of research on germanium, it is impossible to influence the blood by the drugs as yet available.

The best pre-operative and postoperative prophylactic treatment consists in measures to decrease the loss of fluids from the organism, the avoidance of useless starvation, the administration of large quantities of fluid, respiratory exercises, movements in bed, dressings which compress the lower extremities, and elevation of the foot of the bed to activate the venous flow. In suspected cases these may be supplemented by venocentesis or the administration of germanium.

JAMES B. MASON, M.D.

Kimbarowski, J. Early Arising and Postoperative Pneumonia (Pneumonien nach Operationen). *Arch. f. klin. Chir.* 1934, 4, 103.

Kimbarowski compares the incidence of pulmonary complications in 493 cases treated surgically in the period from 1917 to 1933 in which the patients were kept flat on their backs for a considerable time after the operation, and a series of 3218 cases treated surgically in the period from 1909 to 1913 in which the patients were allowed out of bed early. In the first group the incidence of pulmonary complications was 4.63 per cent (stomach operations, 12.3 per cent; appendix operations, 7.5 per cent; operations for hernia, 4.0 per cent; laparotomies, 5.0 per cent; urological operations, 4.5 per cent; and gynecological operations, 4.5 per cent). In the second group it was only 0.74 per cent (stomach operations, including 200 resections, 2.3 per cent; appendix operations, 0.4 per cent; laparotomies, 0.4 per cent; urological operations, 3.5 per cent; and gynecological operations, 0.74 per cent).

The author believes that the enormous difference was due entirely to the early rising and active post-operative treatment in the second series. He attributes postoperative pulmonary complications chiefly to prolonged supine position, diminished heart activity, pulmonary collapse, and psychic disturbances. Early rising tends to prevent the oc-

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Fumarola, G., and Enderle, C. The Dangers, Inconveniences, and Injuries Incident to Myelography with Iodized Oil (Pericoli, inconvenienti e danni della mielografia con gli oli iodati) *Radiol med.*, 1932, **xix**, 1271

This is a report on twenty-six cases in which myelography with iodized oil was done in the neuropsychiatric clinic of the Royal University of Rome. In none of the cases was there any disturbance which could be attributed to an error in the technique of the spinal puncture or the injection of the oil. In fifteen there was no disturbance at all, and in five there was only a mild reaction similar to that commonly noted after spinal puncture. In six cases there was a severe reaction which, in one case, was followed by death.

The authors believe that many of the symptoms observed after the injection of iodized oil are those of an aseptic meningitis caused by decomposition of the oil. They therefore recommend that the stability of the iodized oil be determined before the injection is made. EUGENE T. LEDDY, M.D.

Morrison, L. B. A Study of the Hip Joint from the Standpoint of the Roentgenologist *Am J Roentgenol.*, 1932, **xxviii**, 484.

This study includes a complete anatomical description of the hip joint from the time of birth up to the eighteenth year at yearly intervals based upon roentgen findings. It is profusely illustrated and gives consideration to the acetabulum, the head of the femur, the femoral neck, and the major and minor trochanters.

Particular attention is paid to the developmental changes because these are considered to have a direct bearing upon the production of congenital dislocation and to offer a ready explanation for some of the anomalies and abnormalities noted in and about the joint. In addition to the generally recognized genetic centers of ossification of the acetabulum, which anatomists describe as consisting of three primary and two secondary centers, the author has demonstrated the existence of another genetic center on the superior acetabular rim. This may be divided into an anterior, a superior, and a third posterior segment. Its function is to widen the upper semicircular portion of the rim and thereby deepen the acetabular cavity for the reception and retention of the head of the femur. This center appears constantly in a great majority of the roentgenograms of normal hips of children between the ages of ten and seventeen years, and is found joined to the completed rim by the age of eighteen or sometimes earlier. Its failure to develop normally in any part,



Fig 1. Right hip shows a separate ossicle on the superior margin. It is dense, showing bone trabeculation, and is not homogeneous like a sesamoid. The left acetabular rim shows two ossicles on the superior margin separated from the rim by cartilage. The femoral heads are acorn-shaped, similar to *coxa malum senilis*.

or its overgrowth, explains the shallow acetabulum or the exaggeratedly deep acetabulum, respectively.

The growth of this separate genetic center is traced in detail in connection with two cases in which growth proceeded at variable rates on the two sides because of associated pathological states on one side in each case. An additional proof that these acetabular rim elements are true epiphyses is the fact that ossicles are frequently found on the anterior, superior, and posterior acetabular rim. These serve to deepen the acetabular socket. The author believes that they are accessory rim-forming epiphyses which have failed to join the diaphysis because of defective ossification of the conjugal cartilage. They must be differentiated from sesamoids which are usually rounded and lack the bony structure characteristic of ossicles.

Of the ossification centers forming the other parts of the hip joint under consideration, that of the greater trochanter frequently presents an additional center located on its tip. This also may fail to fuse and form a separate ossicle. In place of this second epiphysis, a bursa may occur in which lime salts may be deposited, producing a somewhat similar appearance. A bursa may form also midway down the side of the great trochanter and after undergoing calcification, may be mistaken for a fracture.

The adult hip joint is also discussed briefly with reference to variations in the acetabulum, anomalies of the antero-inferior iliac spine, and variations in the femur relative to its head and neck. These congenital variations are believed to be inherited char-

At a distance from the external injury the current causes bone lesions combined with capsular ruptures, luxations, subluxations, and tearing out of bone produced by the suddenly contracted and tetanized muscles.

Internal organs also may be severely damaged. The disease conditions caused in the internal organs and nervous system are described, and the anatomy and histopathology are discussed in detail.

The work concludes with a discussion of treatment. "When the victim has been freed, respiration should first receive attention. If respiration is present, there is no need for haste as return of consciousness and improvement in the action of the heart usually occur spontaneously and quickly. If the patient is not breathing, artificial respiration should be started without a moment's delay but with the avoidance of any pressure whatsoever on the thorax." If this is not effective within twenty minutes, *lumbar puncture must be performed, and if cyanosis is present, venesection should be done also.* Oxygen and carbon dioxide are not absolutely necessary. The need for subcutaneous or intracardiac medication must be decided according to the individual case. By the application to the cardiac region of compresses soaked in benzoin it is possible to exert a powerful stimulus on the skin and, through the skin, on the heart itself. PUGH (2)

Schultze, J.: Can Trauma Make a Latent Infection Manifest? (Kann ein Trauma das Manifest werden einer latenten Infektion bewirken?) *Wien klin. Wochenschr.* 1932, 4, 625.

The author first cites several cases to show that trauma may make a latent infection manifest. Tetanus may develop following the removal of a bullet years after the injury, therefore an injection of tetanus antitoxin should be given before such a second operation. Re-correction of a malunited fracture which healed years before with infection

may lead to osteomyelitis, and plastic operations or re-amputations may be followed by erysipelas. Streptococcus serum may be of value before or after the operation. Paranephritis arises from pressure or violence or even from the friction of a knapsack, as its cause is a small staphylococcal focus in the renal cortex which has developed metastatically from another staphylococcal infection (tumor). The constant motion of walking or the play of the lumbar muscles may serve as the trauma which gives rise to such an infection. Fatal streptococcus sepsis may develop after the scraping off of the superficial crust over a wound that is almost entirely healed, and erysipelas may result from the removal of the drain and scrubbing after breast amputation and drainage. Almost completely healed bone or joint tuberculosis may flare up again when movement is resumed and after Calot's correction of spondylitic kyphosis. Even transportation of a wounded person with inadequate splinting, or careless change of dressing may suffice to flare up an infection.

All efforts to demonstrate the extinction of latent infections (stimulating procedures, X-ray irradiation, determinations of the sedimentation time, skin injections) have failed to yield absolutely certain proof. In every case of infection a secondary intervention should be delayed for a period of years. It should not be performed until all manifestations of inflammation have been absent a long time. Operations must be done carefully and possibly in several small steps. As shock lowers the resistance to infection, it also may make a latent infection manifest. The gross mechanical changes include hemorrhage and cell destruction. To explain the analogous occurrence in shock, the biological changes from nervous influences must be considered. It is even possible that psychic trauma by way of the sympathetic nervous system may cause latent infections to become manifest. DIXON HENNET (2)

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Fumarola, G., and Enderle, C.: The Dangers, Inconveniences, and Injuries Incident to Myelography with Iodized Oil (*Pericoli, inconvenienti e danni della mielografia con gli olii iodati*) *Ead of med.*, 1932, xix, 1271.

This is a report on twenty-six cases in which myelography with iodized oil was done in the neuro-psychiatric clinic of the Royal University of Rome. In none of the cases was there any disturbance which could be attributed to an error in the technique of the spinal puncture or the injection of the oil. In fifteen there was no disturbances at all, and in five there was only a mild reaction similar to that commonly noted after spinal puncture. In six cases there was a severe reaction which, in one case, was followed by death.

The authors believe that many of the symptoms observed after the injection of iodized oil are those of an aseptic meningitis caused by decomposition of the oil. They therefore recommend that the stability of the iodized oil be determined before the injection is made

ETGENE T. LADDY, M.D.

Morrison, L. B.: A Study of the Hip Joint from the Standpoint of the Roentgenologist *Am J. Roentgenol.*, 1932, xxviii, 424.

This study includes a complete anatomical description of the hip joint from the time of birth up to the eighteenth year at yearly intervals based upon roentgen findings. It is profusely illustrated and gives consideration to the acetabulum, the head of the femur the femoral neck, and the major and minor trochanters.

Particular attention is paid to the developmental changes because these are considered to have a direct bearing upon the production of congenital dislocation and to offer a ready explanation for some of the anomalies and abnormalities noted in and about the joint. In addition to the generally recognized genetic centers of ossification of the acetabulum, which anatomists describe as consisting of three primary and two secondary centers, the author has demonstrated the existence of another genetic center on the superior acetabular rim. This may be divided into an anterior, a superior, and a third posterior segment. Its function is to widen the upper semicircular portion of the rim and thereby deepen the acetabular cavity for the reception and retention of the head of the femur. This center appears constantly in a great majority of the roentgenograms of normal hips of children between the ages of ten and seventeen years, and is found joined to the completed rim by the age of eighteen or sometimes earlier. Its failure to develop normally in any part,



Fig. 1. Right hip shows a separate ossicle on the superior margin. It is dense, showing bone trabeculation, and is not homogeneous like a sesamoid. The left acetabular rim shows two ossicles on the superior margin separated from the rim by cartilage. The femoral heads are acorn-shaped, similar to corniculum seminis.

or its overgrowth, explains the shallow acetabulum or the exaggeratedly deep acetabulum, respectively.

The growth of this separate genetic center is traced in detail in connection with two cases in which growth proceeded at variable rates on the two sides because of associated pathological states on one side in each case. An additional proof that these acetabular rim elements are true epiphyses is the fact that ossicles are frequently found on the anterior, superior, and posterior acetabular rim. These serve to deepen the acetabular socket. The author believes that they are accessory rim-forming epiphyses which have failed to join the diaphysis because of defective ossification of the conjugal cartilage. They must be differentiated from sesamoids which are usually rounded and lack the bony structure characteristic of ossicles.

Of the ossification centers forming the other parts of the hip joint under consideration, that of the greater trochanter frequently presents an additional center located on its tip. This also may fail to fuse and form a separate ossicle. In place of this second epiphysis, a bursa may occur in which lime salts may be deposited, producing a somewhat similar appearance. A bursa may form also midway down the side of the great trochanter and after undergoing calcification, may be mistaken for a fracture.

The adult hip joint is also discussed briefly with reference to variations in the acetabulum, anomalies of the antero-inferior iliac spine, and variations in the femur relative to its head and neck. These congenital variations are believed to be inherited char-

At a distance from the external injury the current causes bone lesions combined with capsular ruptures, luxations, subluxations, and tearing out of bone produced by the suddenly contracted and tetanized muscles.

Internal organs also may be severely damaged. The disease conditions caused in the internal organs and nervous system are described, and the anatomy and histopathology are discussed in detail.

The work concludes with a discussion of treatment. When the victim has been freed, respiration should first receive attention. If respiration is present, there is no need for haste as return of consciousness and improvement in the action of the heart usually occur spontaneously and quickly. If the patient is not breathing, artificial respiration should be started without a moment's delay but with the avoidance of any pressure whatsoever on the thorax. If this is not effective within twenty minutes, lumbar puncture must be performed, and if cyanosis is present, venesection should be done also. Oxygen and carbon dioxide are not absolutely necessary. The need for subcutaneous or intracardiac medication must be decided according to the individual case. "By the application to the cardiac region of compresses soaked in benzine it is possible to exert a powerful stimulus on the skin and, through the skin on the heart itself."

PURER (X)

Schmitzler, J: Can Trauma Make a Latent Infection Manifest? (Kann ein Trauma das Manifest werden einer latenten Infektion bewirken?) *Wien. Med. Wochenschr.* 1931 4, 654.

The author first cites several cases to show that trauma may make a latent infection manifest. Tetanus may develop following the removal of a bullet years after the injury, therefore an injection of tetanus antitoxin should be given before such a second operation. Re-correction of a malunited fracture which healed years before with infection

may lead to osteomyelitis, and plastic operations or re-amputations may be followed by erysipelas. *Streptococcus serum* may be of value before or after the operation. Paranephritis arises from pressure or violence, or even from the friction of a lamp-pack, as its cause is a small staphylococcal focus in the renal cortex which has developed metastatically from another staphylococcal infection (furuncle). The constant motion of walking or the play of the lumbar muscles may serve as the trauma which gives rise to such an infection. Fatal streptococcal sepsis may develop after the scraping off of the superficial crust over a wound that is almost entirely healed, and erysipelas may result from the removal of the drain and scrubbing after breast amputation and drainage. Almost completely healed bone or joint tuberculosis may flare up again when movement is resumed and after Calot's correction of spondylitic kyphosis. Even transportation of a wounded person with inadequate splinting, or careless change of dressing may suffice to flare up an infection.

All efforts to demonstrate the extinction of latent infections (stimulating procedures, X-ray irradiation, determinations of the sedimentation time, salt injections) have failed to yield absolutely certain proof. In every case of infection a secondary intervention should be delayed for a period of years. It should not be performed until all manifestations of inflammation have been absent a long time. Operations must be done carefully and possibly in several small steps. As shock lowers the resistance to infection, it also may make a latent infection manifest. The gross mechanical changes include hemorrhage and cell destruction. To explain the analogous occurrence to shock, the biological changes from nervous influences must be considered. It is even possible that psychic trauma by way of the sympathetic nervous system may cause latent infections to become manifest.

ERICH HILBERT (X)

small incision sufficient. Carbuncles are also suitable for this treatment. The effect upon metastases is the same as in hidradenitis. In cases of paronychia the pain is decreased and recovery is hastened.

By bacteriological and serological studies of pieces of tissue removed for the release of pus, it was found that twelve hours after the irradiation there is an increase of the inflammation (leucocytosis, phagocytosis, and breaking up of the nucleus) which, twenty-four hours after the irradiation, gives way to a diminution of the infiltration.

The effect of the roentgen rays on the inflamed tissue consists in dilatation of the blood vessels, hyperthermia, increased circulation of the lymph, and an increase in the local and general immunization processes. Bier's hyperaemia and treatment with heat have a similar effect. The advantage of roentgen treatment over these methods consists in the possibility of accurate dosage and a deep effect.

ERNEST ILLÉS (Z)

Pfahler, G. E., and Parry, L. D. The Treatment of Giant-Cell Bone Tumors by Roentgen Irradiation. *Am. J. Roentgenol.*, 1932, XXV, 151.

The authors review twenty-six cases of giant-cell tumor which were given roentgen treatment over a period of twenty-five years—from 1906 to 1931.

Since the method of treatment is different from that of osteogenic sarcoma, in which rapid saturation to the limit of normal tissue tolerance is employed, an accurate diagnosis is necessary.

Reports based on microscopic study were obtained in fourteen of the twenty-six cases. They were misleading so often that the authors conclude that proper interpretations of good roentgenograms are equal, if not superior, to pathological reports.

Following irradiation treatment with fractional high-voltage roentgen rays, the tumors heal by recalcification. Better results were obtained in the young than in the old, and in patients who had had no operative interference than in those who had been treated surgically.

Two patients died of intercurrent infections. One discontinued treatment early although improvement had begun. Of six patients who cannot be traced, all showed improvements. Three were followed for six years or longer. The remaining seventeen are "well" or under observation. By "well" is meant that they have complete function, approximately complete recalcification, and no reason to fear recurrence.

The authors conclude that irradiation is definitely superior to surgery in the treatment of giant-cell tumors of bone, and that crushing or curetting of the bone is a disadvantage rather than an advantage.

CHARLES H. HEACOCK, M. D.

Blohmke, A. Radiotherapy in Otorhinolaryngology (Strahlentherapie in der Hals-, Nasen-, Ohrenheilkunde). *Internat. Zentralbl. f. Ohrenh.*, 1932, XXX, 205.

The first part of this report consists of a review of the history of radiotherapy from the beginning up

to, and including, Coutard's fractional protracted method of applying the roentgen rays. Since at the beginning the roentgen-ray apparatus did not yield sufficiently high voltages and gave a mixture of soft and hard rays and, in addition, an instrument for measuring the dose of rays was lacking, only superficial tumors were irradiated at first. Heavy filtration by means of copper and zinc was then introduced by the gynecologists, and by elimination of the soft rays the penetrating power was greatly increased. After measuring instruments were perfected, the gynecologists were able, by the introduction of the measuring chamber, to work out depth intensity curves at a depth of 10 cm., and in the endeavor to produce increasingly harder rays they came finally to the ultrahard rays of radium. However, in the decades following this period it has been shown that in each case it is necessary to consider carefully whether the best result will be achieved by surgery or the use of roentgen or radium therapy.

Otorhinolaryngology finds itself today in a situation similar to that of gynecology in its time. In cases of malignant tumor we cannot be certain of removing all of the diseased tissue surgically because tumor nests may be present in neighboring or distant lymph regions and the microscope is needed for their recognition. By radiotherapy it is possible, without mutilating the patient, to irradiate homogeneously the entire disease area in addition to the tumor and to destroy malignant cells that have become separated from the tumor. On the other hand, a tumor can often be removed more quickly and more certainly by surgery, in which case radiotherapy is of value only after the operation. Again, in cases of tumor of the accessory sinuses, deep irradiation with roentgen or radium rays is advisable before the operation.

Before judgment is passed on the effectiveness of radiotherapy it is necessary to understand the biological action of the rays on the cells. It has been shown that tumor cells have a somewhat greater sensitiveness to the rays than normal cells. Attempts to increase the sensitiveness of tumor cells by preliminary diathermy have not yet brought decisive results. However it was found that with high depth intensity and the delivery of the total dose, there was frequently an undesired early reaction in the form of an angioneurotic reaction and sensitization. This was turned to advantage by giving a little more than half of the skin erythema dose on one day and the remainder on the following day.

The good results obtained by the gynecologists with the ultrahard rays of radium encouraged attempts with very hard rays heavily filtered and delivered at one time through a number of fields. However these attempts proved disappointing for, in addition to necrotic destruction of the bed of the tumor, carcinoma nests were found. While the intensive irradiation kills the tumor cells in the stage of anabolism, it has no effect on tumor cells in the latent stage. It appears, however, that when the latter pass into the stage of growth, they also perish,



Fig. 2. A large area of calcifying bones over the great trochanter extending into the adjoining soft parts.

acteristics and due to faulty development of certain genetic centers.

The discussion of the causation of congenital dislocation of the hip includes a number of citations from the literature. The author believes that the explanation for the various observations lies in a complete understanding of the genetic center present in the upper acetabular rim. Absence of this genetic center explains the existence of the infantile or shallow acetabulum. It appears that the transitional stages between a normal hip and a hip with congenital dislocation may be ascribed to variations in the potential growth powers of this individual genetic center. A comparison of the width of acetabula with and without congenital dislocation shows that they are nearly equal at the lower margins below the ischial spines except for the normal diminution of the innominate bone due to loss of function from the abnormality. The width through the superior portions, however, shows a marked difference, being much less in the hip with congenital dislocation measured at the same position. This demonstrates how slight an attempt has been made to form the acetabular rim on the anterior or superior margins.

Contrary to the belief commonly held that early congenital dislocation of the hip cannot be diagnosed by roentgen-ray examination of the infant the



Fig. 3. Unilateral congenital dislocation of the hip for comparison of the two acetabula at the superior rim. Note that the right acetabulum is twice the width of the left at the point marked.

author believes that it can be diagnosed with certainty. In cases of congenital dislocation of the hip the hip socket at birth is long and shallow. The portion above the epiphysis is slightly elongated and much more shallow. While the femoral head is still laid down only as cartilage, stereoscopic roentgenograms made of both hips with the legs extended and held in proper position show that in the normal hip the cartilaginous femoral head is below or near the level of the λ -epiphysis and in the congenitally dislocated hip it is in a higher position. The position of the head of the femur in the infant is determined by the diaphyseal portion of the epiphysal edge of the femur.

ADOLPH HANTUSO, M.D.

Dehnel, E. Roentgen Treatment of Inflammations (Roentgenbehandlung von Entzündungen). *Oncos* (Leipz.) 932, p. 682.

The author reports the clinical and histological findings in 72 cases of inflammation which were treated with the roentgen ray. The cases selected for this treatment were those in which immediate surgical intervention was not indicated, the inflammation was not yet circumscribed, and the breaking-down process had not yet occurred. The best results are to be expected from early irradiation. In cases treated early the inflammation may recede without abscess formation or if the pus is already present, the inflammation rapidly recedes and healing takes place more quickly after the abscess is opened.

The best results are seen in cases of hydradenitis. After the activity of the sweat glands has been decreased by the irradiation a caustic therapy is indicated. The next best results are obtained in cases of furuncle, especially furuncle of the face. The surrounding ordema recedes in four or five days, the necrotic portions are cast off or a walling-off and breaking-down process takes place and renders a

small incision sufficient Carbuncles are also suitable for this treatment The effect upon metastases is the same as in hydradenitis In cases of panaritium the pain is decreased and recovery is hastened

By bacteriological and serological studies of pieces of tissue removed for the release of pus, it was found that twelve hours after the irradiation there is an increase of the inflammation (leucocytosis, phagocytosis, and breaking up of the nucleus) which, twenty-four hours after the irradiation, gives way to a diminution of the infiltration.

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Otorhinolaryngology finds itself today in a situation similar to that of gynecology in its time In cases of malignant tumor we cannot be certain of removing all of the diseased tissue surgically because tumor nests may be present in neighboring or distant lymph regions and the microscope is needed for their recognition By radiotherapy it is possible, without mutilating the patient, to irradiate homogeneously the entire disease area in addition to the tumor and to destroy malignant cells that have become separated from the tumor On the other hand, a tumor can often be removed more quickly and more certainly by surgery, in which case radiotherapy is of value only after the operation Again, in cases of tumor of the accessory sinuses, deep irradiation with roentgen or radium rays is advisable before the operation

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but for this effect they must be charged with a dose of rays amounting to many times the skin erythema dose and leading to severe and undesired injury to the surrounding tissue.

For endothelial cells the maximum dose is 1 skin erythema dose. If the skin erythema dose is not delivered at one time but broken up and distributed over a period of days, the dose can be raised to 120 per cent of the skin erythema dose, but this dose must not be repeated within three months.

Ultrahard radium rays have also been used in otorhinolaryngology when roentgen rays have failed. Radium or thorium-V needles are inserted into superficial tumors with or without a preparatory surgical procedure. More deeply situated tumors are treated externally with distant irradiation applied by means of needles, but for this method large quantities of radium are necessary to assure effective deep action. In the absence of a sufficient amount of radium, the radium available was allowed to act over a longer time. It was found that this more protracted irradiation gave better results. The French school then sought to apply these experiences with radium to roentgen therapy and Coutard developed his method of protracted (fractional "long time" roentgen irradiation with a mixture of roentgen rays which, on the one hand, was almost equal in hardness to radium rays and, on the other hand, could be administered as to deliver 3 r per minute or 180 r per hour. In thirty days, with the daily application of 180 r to each of one or two fields, the greatly raised total dose of 5,400 r is delivered. At the end of from ten to twelve days evidence of accumulation appears in the skin or mucous membrane (reddening or brownish of the skin and scaling and possibly vesicle formation or inflammatory swelling of the mucous membrane with fibrous patches) this is

taken to indicate that the irradiation has acted long enough and must be stopped. There are no unfavorable after-effects. By Coutard's long time irradiation a pronounced elective action of irradiation on normal cells and tumor cells is attained.

There is no basic difference between roentgen and radium rays and their action. Which of them should be given preference depends upon the individual case. The possibility of using radium irradiation diminishes rapidly with the extent of the tumor. Radium must yield to roentgen rays when the approach to the disease focus in the tissues is difficult as, for instance, in the mesopharynx and hypopharynx.

It has been learned how to determine in advance the radiosensitivity of a tumor from its histological structure. Of the two main groups of carcinomas, the spider mold and the anaplastic mold, the latter are reckoned as the more sensitive to irradiation. The transition form, which develops especially in the oral cavity the tonsils, and the base of the tongue, is held to be particularly radiosensitive. Lymphadenoid and round-cell sarcomata are highly radiosensitive tumors, whereas fibrosarcomata and myxosarcomata are less sensitive.

It would appear that with Coutard's "long time irradiation" a new era in the treatment of tumors is beginning. However tumors in the field of otorhinolaryngology should not be subjected to Coutard's irradiation indiscriminately. The points of view set forth by Zippinger should serve as guidelines to whether the individual case should be treated by the older methods or by long time irradiation. Zippinger's criteria are: (1) the extent and site of the primary tumor; (2) the presence or absence of metastases; (3) the general condition; and (4) the histological structure of the tumor.

A. ROBERTS (Ill.)

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Bloom, C J Rickets A New Treatment Preliminary Report *South M J*, 1932, **xx**, 1109

From a study of seventeen cases of active rickets and fourteen cases in which prophylactic treatment for rickets was given the author concludes that rickets may be prevented and cured by the use of secondary calcium phosphate added to milk directly and without the additional use of cod liver oil, viosterol, or derivatives thereof. The children were not exposed to sunshine. The normal ratio of calcium to phosphorus was maintained, and no hypercalcemia, hyperphosphatemia, or obstinate constipation resulted.

The best results were obtained when the salt was added to (1) a mixture of unsweetened milk, corn syrup, and lactic acid, (2) condensed milk, (3) dried milk mixtures, and (4) diluted cow's milk.

The following possibilities are suggested to explain the results

- 1 The calcium and phosphorus content of cow's milk are not available for complete metabolism because large amounts of these elements are contained in the curd

- 2 The hydrogen-ion concentration of the gastric contents is a factor in rickets, and an increased acidity facilitates the absorption of calcium and phosphorus

- 3 The type of milk is a factor in the utilization of the secondary calcium phosphate

- 4 The added salt, in supplying an excess of calcium and phosphorus, replaces the amounts of these substances contained in the curd which are apparently unavailable

HAROLD M BRILL, M D

Laubry, C, and Marchal, G Hodgkin's Disease and Tuberculosis (Maladie de Hodgkin et tuberculose) *Presse méd*, Par, 1932, **xl**, 1397

The authors cite and discuss clinical, anatomical, bacteriological, and experimental facts in support of the theory that Hodgkin's disease is of tuberculous origin. The clinical facts cited are the following

- 1 All of the known forms of tuberculosis are frequently found associated with malignant granulomatosis

- 2 In some cases of tuberculosis there is a generalized lymphadenia with few bacilli and no caseation

- 3 Both tuberculosis and lymphogranulomatosis often cause a serofibrinous pleurisy

The anatomical facts cited are as follows

- 1 The most common anatomical association is an acute pulmonary or polyvisceral tuberculosis

hastening the terminal phase of a malignant granulomatosis

- 2 Associated granulomatous and tuberculous lesions attack the same organs which are rich in reticulo-endothelial tissue, such as the glands and the spleen

- 3 While the giant cells of Sternberg and the giant cells of Langhans are usually different in appearance, they have been proved to have a common origin in the reticulo-endothelial system

The bacteriological observations suggesting the tuberculous nature of Hodgkin's disease are summarized as follows

- 1 In most cases of lymphogranulomatosis there are very fine follicular lesions lost in a granulomatous mass which are easily overlooked on superficial examination. Around these lesions Koch bacilli collect. When the two types of lesions are associated, the Koch bacilli multiply in the follicular zone and are scarce in the granulomatous layers

- 2 The lesions of malignant lymphogranulomatosis frequently show granules of various sizes which are not acid-fast and take the Gram stain. These have been regarded as a special form of tubercle bacilli, but the authors have observed transition forms between them and the acid-fast bacillus

The experimental facts which are cited are as follows

- 1 Tuberculosis may be produced in guinea pigs by the injection of lymphogranulomatous products

- 2 Chronic polyadenopathies may be produced by the injection of the products of lymphogranulomatosis and the ultra-virus of tuberculosis.

- 3 Lesions histologically resembling those of Hodgkin's disease have been produced by the injection or inoculation of lymphogranulomatous products or more or less modified Koch bacilli

In conclusion the authors state that involutional forms of the Koch bacillus produce different lesions. The classical acid-fast Koch bacillus causes fibrocaseous adenitis tending toward suppuration and, more rarely, a sclerous polyadenopathy corresponding to an infection with few bacilli of attenuated virulence. The filtrable (granular and invisible) forms seem to produce a series of reactions, some of which correspond to lymphogranulomatosis. In this infection, not merely a single organ, but a whole system, the reticulo-endothelial system, is involved, a fact explaining the multicentric development of the condition. The authors believe that the special variety of reticulo-endothelioma or atypical sarcoma occurring in Hodgkin's disease is preceded by a reticulo-endothelitis due to a filtrable virus. They conclude that Hodgkin's disease is an atypical cancerigenic tuberculosis of the reticulo-endothelial system.

EDITH S MOORE

Brofeldt, S. A.: A Pathologico-Anatomical and Clinical Study of Necrosis of the Extremities (Pathologisch-anatomische und klinische Studien über die Extremitätennekrose) *Acta Soc. med. Fen. lxxv Dandiacus* 93 xiv 6.

The 141 cases of Buerger's disease on which this report is based are divided into the following 3 groups: (1) those of persons under forty-five years of age, 41 cases; (2) those of persons between forty-five and sixty years of age, 51 cases; and (3) those of persons over sixty years of age, 49 cases.

This division is hardly justified in the pathologico-anatomical sense as the changes noted in the arteries, veins, and perivascular tissues in the 3 age groups might all be ascribed to a common cause, viz. an arteriosclerotic or other obstruction to the blood flow to the extremity. In the few cases in which the abdominal aorta or the iliac artery has been examined in this condition an obstruction of some kind (arteriosclerosis, congenital stenosis) has usually been found. In the author's opinion the acute peripheral lesions with hypertrophy of the intima, fresh thrombi, and infiltration with polymorphonuclear leucocytes, which usually occur on the venous side, are clinically transient in character develop more frequently in younger persons than in old persons, and are cited by American surgeons as evidence of an infectious origin of the disease, are probably of an infectious nature. However they are to be regarded as merely secondary manifestations of an ascending lymphangitic process due either to invasion from the torpid skin lesions so characteristic of this disease or the entrance of the infective agent through the intact but poorly nourished skin of the extremity.

These acute lesions are seen also, although less frequently in older persons. However vascular lesions in older persons and the apparently older lesions occurring in the more centrally lying arteries (popliteal, femoral) in younger persons are less suggestive of inflammation and more suggestive of old destructive and reparative processes extending over considerable periods of time. There is a tendency toward marked fibrosis of the perivascular tissues, atrophic changes in the muscular layers of the vascular walls, hyperplasia, disarrangement or destruction of the elastic, and marked stenosing hypertrophy with areas of destruction and even calcification of the intima. The intimal bases of the vessels may exhibit ulceration and the vessel may be thrombosed at this point. The leucocytic collections in the intima and thrombus in these cases are ascribed, not to infection, but to a reaction to the irritation of contact with the thrombus which, in the more advanced lesions, leads to organization of the thrombus. In describing the processes resulting in these advanced chronic lesions in old and young alike, the author says that the nutrition of the wall of the vessel is decreased because of insufficiency of the blood flow through the vasa vasorum as a result of the reduction in the blood pressure caused by the obstruction in the central vessels (abdominal aorta

iliac artery). As a result, mild necrosis and reparative processes occur. Thrombosis is then favored by the slowed blood flow through the artery itself.

Factors such as race, age, sex, living conditions, over-exertion, the abuse of tobacco, and exposure are admitted to exert a secondary influence and are therefore to be considered in deciding upon the treatment. The only medicinal treatment which seems to have any effect is the use of typhoid vaccine and injections of saline solution, and this acts chiefly on the subjective symptoms.

The level at which amputation should be done is still a moot question. In the older cases in which the gangrenous process is so frequently initiated by a failing heart and total obliteration of the peripheral vessels is not so frequent, strengthening of the cardiac function may suffice to control the spread of the gangrene and a simple toe amputation may be considered. Foot amputations do not seem worth while. When toe amputation does not seem sufficient, the level of amputation should be raised at once to below the knee. In the cases of young persons this level is to be considered even when there is no palpation in the popliteal artery as young persons are more likely to want to wear a prosthesis and, if amputation of the other foot becomes necessary, they will be more likely to have the vitality to stand re-amputation if amputation at this level should fail. In all other cases the amputation should be done above the knee. *JOSEF W. BARNARD, M.D.*

Bela, G.: The Question of the Danger of Contagion from Malignant Neoplasms (Zur Frage der Ansteckungsgefahr beim bösartigen Krebsgeschwulst) *Rev. der Arch.* 93 xiv 147.

On the basis of three of his own observations, in which transmission of malignant tumors to patients was suggested, the author subjects the voluminous literature on the question to thorough investigation. In conclusion he says that the possibility of transmission of malignant neoplasms from one person to another is a sufficiently real danger for which suitable prophylactic measures should be instituted. At the present time such measures are completely disregarded by the laity and even by physicians.

The first observation was that of a brother and sister. The brother forty-two years of age, died from cancer in the region of the hepatic flexure which led to symptoms of intestinal obstruction and demanded an ileocecal resection. Five months later the sister thirty-four years of age, was operated upon for symptoms of intestinal obstruction. The abscesses at the cecum were separated and after several months a second laparotomy for acute ileitis revealed a cancerous tumor at the splenic flexure. Resection of the intestine resulted in death. It was noted that the patients lived in close association during the last three years.

The second observation was that of a woman thirty-four years of age and her daughter fourteen years of age. For a year the daughter suffered from intense pains in the left hip. Extensive destruction

of the ilium and the neck of the femur was demonstrated roentgenologically. The daughter died soon after her discharge from the hospital. Ten months later the mother was admitted on account of severe pains in the region of the stomach. As she had been operated upon a year and a half previously for a gastric ulcer of three years' duration (gastro-enterostomy), another laparotomy was done under the diagnosis of peptic jejunal ulcer. However, the operation revealed a pyloric cancer and carcinoma-tosis of the abdominal cavity. The patient died from cachexia. The mother had kissed her daughter frequently, had slept in the same bed with her, and had eaten from the same dishes.

The third observation was that of a woman forty-seven years of age who suffered from cancer of the rectum. She was operated upon repeatedly and died from postoperative peritonitis. Her husband, sixty years of age, came to the clinic four years after her death, also suffering from a malignant tumor situated high up in the colon.

G. ALIPOV (Z)

Warren, S. The Immediate Causes of Death in Cancer. *Am J M Sc*, 1932, clxxxiv, 610

In 500 cases of carcinoma coming to autopsy the attempt was made to determine the immediate cause of death by a study of the clinical records and the postmortem findings. The cases were selected at random, but care was taken to exclude sarcoma, lymphoblastoma, and leukæmia.

The most common cause of death was cachexia. Cachexia was considered the immediate cause only

when no lesion sufficient in itself to be fatal was discovered.

The mortality from cachexia was highest in carcinoma of the breast and carcinoma of the stomach (33.3 and 45.2 per cent respectively) and lowest in carcinoma of the bladder (4.3 per cent). Carcinoma of the breast was responsible for over one-fourth of the deaths from cachexia, carcinoma of the rectum and colon, for 17.5 per cent, and carcinoma of the stomach, for 16.7 per cent.

Pneumonia occurred in 14 per cent of the cases. There were 64 cases of bronchopneumonia and 6 cases of lobar pneumonia.

Carcinoma of the lip and carcinoma of the pharynx were responsible for 24.3 per cent of the cases of pneumonia.

Renal insufficiency accounted for 13 per cent of the total number of deaths. Carcinoma of the cervix uteri was responsible for 41.5 per cent of the deaths from renal insufficiency, carcinoma of the bladder, for 26.2 per cent, and carcinoma of the prostate for 18.5 per cent.

Peritonitis which occurred most frequently as a postoperative complication, accounted for 11.2 per cent of the fatalities.

Five per cent of the deaths were due to pulmonary insufficiency, and 5 per cent to embolism of the pulmonary artery or the right heart.

Hæmorrhage was responsible for only 4 per cent of the deaths.

In 14 cases the immediate cause of death could not be determined. NORMAN C. BELLOCK, M.D.

Brofeldt, B. A.: A Pathologico-Anatomical and Clinical Study of Necrosis of the Extremities (Pathologisch-anatomische und klinische Studien über die Extremitätennekrose). *Acta Soc med Fennica Helsingfors* 1913 XI 6.

The 147 cases of Buerger's disease on which this report is based are divided into the following 3 groups: (1) those of persons under forty-five years of age, 47 cases; (2) those of persons between forty-five and sixty years of age, 31 cases; and (3) those of persons over sixty years of age, 69 cases.

This division is hardly justified in the pathologico-anatomical sense as the changes noted in the arteries, veins, and perivascular tissues in the 3 age groups might all be ascribed to a common cause, viz., an arteriosclerotic or other obstruction to the blood flow to the extremity. In the few cases in which the abdominal aorta or the iliac artery has been examined in this condition an obstruction of some kind (arteriosclerosis, congenital stenosis) has usually been found. In the author's opinion the acute peripheral lesions with hypertrophy of the intima, fresh thrombi and infiltration with polymorphonuclear leucocytes, which usually occur on the venous side, are clinically transient in character develop more frequently in younger persons than in old persons, and are cited by American surgeons as evidence of an infectious origin of the disease, are probably of an infectious nature. However they are to be regarded as merely secondary manifestations of an ascending lymphangitic process due either to invasion from the torpid skin lesions so characteristic of this disease or the entrance of the infective agent through the intact but poorly nourished skin of the extremity.

These acute lesions are seen also, although less frequently in older persons. However vascular lesions in older persons and the apparently older lesions occurring in the more centrally lying arteries (popliteal, femoral) in younger persons are less suggestive of inflammation and more suggestive of old destructive and reparative processes extending over considerable periods of time. There is a tendency toward marked fibrosis of the perivascular tissues, atrophic changes in the muscular layers of the vascular walls, hyperplasia, disarrangement or destruction of the elastic, and marked stenosing hypertrophy with areas of destruction and even calcification of the intima. The intimal lumen of the vessels may exhibit ulceration and the vessel may be thrombosed at this point. The leucocytic collections in the intima and thrombus in these cases are ascribed, not to infection, but to a reaction to the irritation of contact with the thrombus which, in the more advanced lesions, leads to organization of the thrombus. In describing the processes resulting in these advanced chronic lesions in old and young alike, the author says that the nutrition of the wall of the vessel is decreased because of insufficiency of the blood flow through the vasa vasorum as a result of the reduction in the blood pressure caused by the obstruction in the central vessels (abdominal aorta,

iliac artery). As a result, mild necrosis and reparative processes occur. Thrombosis is then formed by the slowed blood flow through the artery itself.

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JOHN W. BUELLER, M.D.

Bela, G.: The Question of the Danger of Contagion from Malignant Neoplasms (Zur Frage der Ansteckungsgefahr seitens bösartiger Neubildungen). *Nem. chir. Arch* 1913, XIV 217.

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INTERNATIONAL ABSTRACT OF SURGERY

APRIL, 1933

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Wassmund, M., and Anders, H. E. A Hitherto Unknown Destructive Disease of the Jaw Bones (Ueber eine bisher unbekannte destruerende Erkrankung der Kieferknochen) *I. j. schr. Zahnheilk.*, 1932, XLVII, 157

The author reports two cases of disease of the jaw bones seen in his clinic which could not be classed with any known disease entity. The condition was a destruction of the bone beginning in the marrow and having no relation to the periodontium or vital or devitalized teeth. The extension was neither by alveolus nor alveolar process, showed no constant form, varied in the sharpness of its outline, and apparently stopped at the ascending ramus. A granulation tissue developed insidiously and progressed slowly in the region of the alveoli. The disease sometimes occurred simultaneously in both the upper and the lower jaw. The signs and symptoms were loosening of the teeth, soreness, and, if the granulation tissue had reached the nerve trunk, neuritis and sensitiveness to pressure. Resorption of the roots seemed to be very rare. Involvement of the periosteum and mucosa was only secondary. Reactive inflammation was absent. Roentgen-ray examination is essential. In the cases reported lateral extension of the granulation tissue was inconstant. The tissue had no relation to the bone. It was reddish-yellow and quite soft, and in the center it either liquefied or hardened. Wounds caused by the extraction of teeth in the diseased areas showed little tendency to heal. Bacteriological staining of the granulations was negative. The growth was tumor-like throughout as in giant-cell tumors. After having penetrated the mucous membrane and become separated from the stroma, the granulation tissue showed no further growth tendency, but a connective-tissue-like hardening. The mucous membrane of the antrum of Highmore acted similarly. Great irritation, such as that produced by the implantation of a bone graft, seemed to cause the tumor to degenerate. In the treatment, thorough curettage

is necessary, but continuity resection is not required.

The author reports briefly a case in which similar granulation tissue was found in the auditory canal. The histological examination, which was made by Anders, showed a similarly formed, very cellular granulation tissue from young mesenchymal elements bound together in a reticular form. In the second stage there was an exudation which sometimes formed small pseudo-abscesses. Participation of new capillaries in the reticulum was not demonstrable. No exciting cause could be determined. The accumulation of a lipid or albuminous substance was not a factor. Later, lymphocytes, plasma cells, and histocytes appeared. The picture was similar to that of sarcoma, but the structure ruled out an autonomous proliferation.

The histological picture of this disease did not resemble that of any known pathological condition. The differences of the condition from known bone diseases are reviewed. The bone destruction seemed to depend upon tryptic processes. The disease resembled non-specific inflammatory resorption tumors. The cause is unknown. HAUENSTEIN (Z.)

Jaffé, R. H. Adenolymphoma (Onkocytoma) of the Parotid Gland. *Am. J. Cancer*, 1932, XVI, 1415

The name "adenolymphoma" has been given to a very rare tumor which occurs in the region of the salivary glands and is composed of a lymphadenoid stroma with large germinal centers and of epithelial structures in the form of tubular glands, cysts, and papillae. The epithelial lining of the glands is morphologically identical with a type of cell which develops physiologically in the salivary glands with progressing age and for which Hamperl has suggested the name "onkocytes." Because of the cysts and papillae, the neoplasm has been called a "papillary cystadenolymphoma" or "papillary cystadenoma lymphomatousum."

The tumor is benign and well encapsulated and grows slowly. It occurs most frequently in males be-

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The treatment indicated is radical removal of the tumor. The author reports a case of odontoma in the region of the second lower premolar on the right side in a woman twenty-nine years of age. The neoplasm was removed and found to consist of a spindle-celled stroma and a bone-like hard substance. Leopold concluded that in the periphery of the tumor, which showed mosaic structures, a bone-destroying process was still active, whereas in the center it had become quiescent. The formation of the odontoma therefore was brought about by the destruction of old bone. The degenerative process was of the nature of osteitis fibrosa in its terminal stage.

GEBHARDT-BODENSTEIN (H)

Ivy, R. H., and Curtis, L. Salivary Calculi. *Ann Surg.*, 1932, xcvi, 979

Of ninety-six patients with symptoms of obstruction of the salivary ducts, seventy-three were found to have calculi. The authors' experience indicates that salivary calculi are more common than is suggested by the reports in the literature and are frequently overlooked.

According to Söderlund and Naeslund, many salivary calculi are due to the saprophytic actinomyces in the mouth, the colonies in the ducts causing decomposition of the protein of the saliva with a change in the hydrogen-ion concentration and a resulting precipitation of calcium salts. Söderlund reported forty-one cases and Naeslund reported fifty cases in which examination of the calculi showed the presence of actinomyces. The Wolff-Israel pathogenic strain has also been discovered. The demonstration of macroscopic foreign bodies in the calculi is rare.

In sixty-six of the authors' seventy-three cases of salivary calculi the stones were in the submaxillary gland or duct, and in seven they were in the parotid gland or duct. They were demonstrated by X-ray examination in forty-four of the former and four of the latter.

In typical inflammatory obstruction of Wharton's duct by a calculus there is an acute or subacute swelling in the submaxillary region which is tender, well-circumscribed, and not adherent to the skin. Pain may be severe, especially when the attempt is made to swallow food (salivary colic). There is no limitation of the opening of the mouth. In the cases reviewed, the duration of the symptoms varied from a few days to seventeen years. Thirty-seven of the patients had had multiple attacks. In the acute attack there is usually a tender edematous swelling in the floor of the mouth. The outlet of the duct may be reddened, and pus may be expressed from it. The calculus may be palpable in the duct. In the roentgen examination the ordinary external film of the lower jaw region will frequently fail to show a small stone situated in the anterior part of the duct as the shadow of the stone may be hidden by that of the mandible. For the diagnosis of a calculus in the anterior two thirds of Wharton's duct a No. 2 film (2½ by 3¼ in.) is placed in the occlusal plane be-

tween the upper and lower teeth and the rays are directed from beneath the chin.

Submaxillary swelling due to obstruction of Wharton's duct by a calculus is commonly mistaken for a lymphadenitis or cellulitis due to infected teeth or tonsils. Cellulitis of dental origin may usually be ruled out by careful consideration of the history of the symptoms, the findings of the examination described, and the absence of trismus. A carcinomatous metastasis to the submaxillary and cervical lymph nodes is usually fixed and markedly indurated, and frequently bound down to both the skin and the bone. Ranula has been confused with obstruction of the submaxillary duct and has been repeatedly ascribed to a calculus. Ranula is a soft, painless, transparent swelling beneath the mucous membrane of the floor of the mouth. It contains clear, ropy fluid and may be due to inflammatory closure of one of the ducts of the sublingual gland or one of the smaller mucous glands.

In six of the authors' seven cases of calculus of the parotid gland or duct pus could be expressed from the duct. In all, the condition was manifested by a painful external swelling over the region of the gland. Four of the patients had had several attacks. A calculus in the parotid gland or duct can sometimes be demonstrated roentgenologically by placing the film between the duct and the teeth, but is revealed best by examination made in the antero-posterior position with an attempt to throw the shadow of the parotid region on the film external to the shadow of the ascending ramus of the lower jaw.

The treatment of calculus of the salivary glands is primarily removal of the calculus. This can usually be accomplished through an intra-oral incision. In cases of long standing with chronic inflammation and degenerative changes in the gland, removal of the entire gland is advisable. E. S. PLATT, M.D.

EYE

Spackman, E. W. X-Ray Diagnosis of Double Perforation of the Eyeball After Injection of Air into the Space of Tenon. *Am. J. Ophth.*, 1932, xi, 1007

For the diagnosis of double perforation in cases in which other diagnostic measures fail, the author recommends the injection of air into the space of Tenon.

After the eye has been thoroughly anesthetized, the patient is instructed to turn it downward and inward, and with precautions for asepsis, the conjunctiva is grasped at a point midway between the superior oblique and external rectus. A curved cannula is then inserted below the conjunctiva and the needle carried between the conjunctiva and Tenon's capsule for a few millimeters before the capsule is punctured. If a straight cannula is used the air will leak back below the conjunctiva and into the retrobulbar tissues. From 6 to 8 c.c. of air are injected. When proptosis of the eye is caused by the air posterior to the globe and increased resistance

tween the ages of forty five and seventy years. Its most common site is the parotid gland. In a few instances it has been found near the submaxillary gland or posterior to the sternocleidomastoid muscle. Its duration varies between two and thirty years. As it is usually located on the external aspect of the gland, its surgical removal is not difficult. In some cases, however, its capsule may fuse with the capsule of the gland. After extirpation a small depression remains in the gland. The wound heals quickly. No recurrences have been observed so far.

On external inspection the tumor resembles a lymphoma. Its greatest diameter varies between 3 and 6 cm. Its shape is ovoid or coarsely lobulated, and its surface is covered with a thin, adherent capsule. It cuts with ease. The sectioned surface is either smooth or finely granular or shows small cysts filled with serous or colloid material. The color varies from a light purple gray to a purple brown.

Microscopic examination shows tubular glands and small cysts lined with a double layer of cylindrical epithelial cells. The latter may be raised to slender and branched papillae. The cells are pale and under low-power magnification appear homogeneous. The nuclei stain deeply and are located near the lumen. The space between the glands and the cysts is filled with lymphatic tissue which forms also the core of the papillae. Most investigators stress the presence of large germinal centers. The epithelium rests upon a thin membrane which seems to fuse with the argentaffine reticulum of the lymphatic stroma.

The most interesting finding in the tumor reported by the author was the presence of intercellular secretion capillaries with distinct evidences of secretory activity. It is this secretory activity which leads to the dilatation of the glands and their transformation into small cysts.

From the histological description given it can be seen that in the case reported secretion by the tumor epithelium was a striking feature which undoubtedly added to the expansion of the tumor. There is no outlet for the secretion products. Accord-
g to the staining reactions the secretion forming the colloid-like content of the gland and small cysts is of two types. The small granules or droplets in the cytoplasm of the tumor epithelium are probably secretory in nature and are discharged at the intercellular capillaries where they fuse to homogeneous masses. Under the secretory pressure of the living cells these masses are pushed into the lumen of the glands. In addition to the secretion into the intercellular capillaries, the cells seem to get off small droplets directly into the lumen which thus differ-
ently from the material in the secretory capillaries.

As indicated by the name adenoid lymphoma it is generally believed that lymphatic tissue takes an active part in the formation of the tumor. However, the author believes that the lymphatic tissue is not an essential part but the remnant of lymph nodes. The large germinal centers indicate an active

neoformation of lymphocytes. While it is true that the stroma of the parotid gland has a tendency to form lymphatic tissue and that in chronic inflammations of this gland the overgrowth of the lymphatic elements may be very marked, it must be kept in mind that when a heterotopic tissue develops in a lymph node the normal anatomical structure may be so altered as to become obscured. Recent studies have shown that the germinal centers of Flemming are not foci of proliferation of the lymphatic cells but reaction centers which are formed whenever there is an increased demand for responsive activity of the lymphatic tissue. It is therefore very likely that the germinal centers in the stroma of the adenoid lymphomas are the result of the resorption of some of the material produced by the epithelial cells.

The tumors under discussion are usually located closely adjacent to but not within, the salivary glands, in places where small lymph nodes are frequently found. In these lymph nodes, islands of aberrant salivary gland tissue are relatively common. The shape of the tumor is that of a lymph node. It is therefore most logical to assume that the tumors develop from misplaced islands of glandular tissue in the lymph nodes about the salivary glands. The great majority of the neoplasms occur in advanced age at the time when the oncocytes appear in the main gland, and not infrequently lead to nodular hyperplasia. In heterotopic islands of gland lar tissue the hyperplasia may be so marked that it results in true tumor formation. As the chief sclerotic element of the tumor is the oncocytes the tumor may be appropriately called an oncocyoma.

JOHN E. SAUER, M.D.

Leopold E. A Rare Tumor in the Lower Jaw
Which arose without Nodulating in Lymphatic
Tissue, and Invasiveness

(Of the tumors arising from the proliferation of a degenerated tooth pulp the rarest are the odontomas. These tumors were first described in 1845 by Brox. He classified them according to the period of their development. Although there is still some doubt as to the details of their origin it may be assumed to some degree of certainty that they arise from part of the tooth germ which become separated and develop independently. It is supposed that they may arise also from the fifth molar tooth in some cases the enamel organ of dental papilla may be duplicated and retain the tumor may develop from their anamniotic portion. Histological studies have shown that odontomas consist of hard pulp and pulp like tissue dentin, enamel and enamel. They are most common in the lower jaw small children and regions and are most frequent between the ages of 10 and 30 years. In the development of the tumor the absence of epidermis and pulp rule out the possibility of a cyst. The tumor is not the same as the dentinoma. The tumor is also characterized by the presence of the tumor in the lower jaw.)

Central America thirty years of age. On the bulbar conjunctiva and cornea there was a flat, disk-shaped growth with its center on the limbus. The growth increased rapidly in size. The eyeball was enucleated.
VIRGIL WESCOTT, M.D.

Hill, E. Papilloedema and Intracranial Complications of Leukæmia. *Am J Ophth*, 1932, xv, 1127.

Hill reports two cases which support the mechanical theory of choked disk.

The first case was that of a ten-year-old girl with a primary nasopharyngeal tumor of lymphoblastic origin, increased intracranial pressure, and a leukæmic blood picture. At autopsy, no brain tumor was found. The papilloedema was ascribed to blockage by lymphocytes in the cerebrospinal fluid.

The second case was that of a forty-one-year-old woman with a chronic myelogenous leukæmia and increased intracranial pressure. Splenectomy was done and subsequently X-ray treatment was instituted with success.

In conclusion the author says that the leukæmias, being localized and generalized processes which attack the eye and brain, may cause hæmorrhage and tumors in the cranial cavity with papilloedema.

VIRGIL WESCOTT, M.D.

EAR

Babbitt, J. A. Some Studies on Middle Ear Infection. *J Am M Ass*, 1932, xcix, 2241.

An effort is made in this article to correlate studies of palliative methods, bacteriological examinations, routine blood examinations, attic operative work, and autopsy sections.

In the palliative treatment of middle ear infection zinc ionization proved more efficacious than any other method.

In a group of cases of primarily aural conditions the streptococcus hæmolyticus and staphylococcus aureus predominated in cultures taken from the middle ear through a perforation.

In cases of aural conditions with coincident systemic disease the changes in the relationship between the total red cell count and the hæmoglobin and between the total white cell count and the neutrophile count were of little significance.

A modified attic operation was done on eighty ears. After the operation the ear was dry in 62.5 per cent and practically dry in 9 per cent. In 11 per cent, improvement was noted, and in 17.5 per cent the treatment failed.

Sections from a number of autopsy specimens were studied with the hope of obtaining information of value regarding the behavior and transmission of infection in the middle ear. One of the specimens demonstrated the course of the infantile chorda tympani nerve with remarkable clearness, and another showed the so frequently faulty location of the tympanic incision in acute middle ear infection.

GEORGE R. McAULIFF, M.D.

Williams, H. L., Jr. Masked Mastoiditis. *Minnesota Med*, 1932, xv, 813.

The author reviews forty-one cases of masked mastoiditis. Thirty of the patients were men. The average age of the patients was thirty-seven years. The youngest patient was seven years and the oldest sixty-seven years. In twenty-four cases the condition occurred on the left side, in sixteen cases, on the right side, and in one case on both sides. In all of the cases there was a history of previous disease of the middle ear or infection of the upper part of the respiratory tract. Swelling over the mastoid process was present in nineteen cases. Lancing pain was the chief complaint in fourteen cases. This symptom developed sooner or later in the majority of cases in which extensive dural involvement was found at operation. In three cases the chief complaint was dull pain in the affected side, in one case, generalized weakness, in one case, continued fever, and in one case, recurring earache.

In eighteen cases in which cultures of the mastoid wound were made at operation under precautions for sterility a pure culture of organisms was obtained.

That there is an anatomical factor tending to produce mastoiditis of a comparatively symptomless type seems probable. In eight of the cases reviewed marked sclerosis of the mastoid cortex was found at operation. The patients were in the fourth decade of life or beyond. In twelve cases a well-developed petrosquamous lamina was found. In six cases the structure of the mastoid apparently played no part in the production of unusual symptoms.

Drooping of the posterosuperior wall of the external auditory canal was found in twenty-four cases, but no suggestion of drooping could be discovered in seventeen. Tenderness over the mastoid process was usually not present until very late and often could not be discovered at any time.

In eighteen cases there was a parasinus abscess, and in four, an epidural abscess in addition. Extension to the interior of the jugular vein occurred in only one of these cases.

In this type of mastoiditis at least, extension of the disease to the dura over the sinus or over the middle fossa is not of itself of serious prognostic significance. Of great importance, however, is operative exposure of the involved meninges until tissue of normal appearance is reached. The exposure of the dura should be sufficiently wide to allow the intracranial pressure to tampon the dura down into the region of dehiscence, thus preventing seepage to uninvolved areas.

In the forty-one cases of masked mastoiditis reviewed there were three deaths, a mortality of 7.3 per cent, whereas in the whole series of 585 cases of acute and subacute mastoiditis, including complications the mortality was 3.2 per cent. All of the deaths from masked mastoiditis occurred in cases in which the diplococcus pneumoniae, Type 3, was present. However, in the uncomplicated cases in which this organism was present and complete ex-

is felt on the piston of the syringe, the injection is discontinued. The propulsions must be apparent. It constitutes the best guide to the correctness of the procedure. If the conjunctiva bulges forward the needle is not in the space of Tenon or there is too much leakage. Under such circumstances the test is of no value. The roentgenograms are made at leisure and preferably are made from several angles as it is important to separate the shadow of the foreign body from that of the space of Tenon. The layer of air below Tenon's capsule forms a band which may be plainly visualized in contrast to the denser bony tissue of the orbit. By making roentgenograms from various angles the relation of the particles to the capsule may be accurately demonstrated.

The procedure causes little or no pain. Patients have complained merely of a sense of pressure on completion of the air injection and have been perfectly comfortable during the examination. The air disappears within four or five days without causing untoward symptoms or complications.

LESLIE L. MCCOY, M.D.

Hudson, A. C.: Some Surgical Experiences Relative to Disorders of the Lens. *Proc Roy Soc Med Lond* 1932, 25th, 29.

Hudson reviews 275 consecutive cases of cataract extraction with peripheral iridectomy. In 30 (6 per cent) prolapse of the iris occurred. In 27 (3.3 per cent) it was replaceable. In 15 (2.7 per cent) total iridectomy was done. As lens remnants behind the iris are the most frequent cause of prolapse, it is advisable to use bomastropia before and atropia after the operation.

Loss of vitreous occurred in 0.6 per cent of the cases reviewed and in 2.0 per cent of a total of 450 cataract extractions. The more virid the vitreous, the more serious its loss. The danger of loss of vitreous can be reduced by the use of a lid retractor which completely prevents squeezing.

In 3 of the cases reviewed, acute infection occurred. One of the patients with acute infection was a diabetic. In the case of another diabetic an eye was lost because of glaucoma. In the case of a fourth patient an eye was lost because of complications due to prolapse of the iris, and in the case of a fifth because of sympathetic inflammation. Three eyes were lost because of postoperative intra-ocular hemorrhages. In a myopic eye detachment of the retina occurred after seventeen months.

Capulotomy was performed as an almost routine procedure a few weeks after the extraction. Glaucoma following capulotomy is a serious complication. Cataract due to a perforating injury should be left alone in the early stages. In children, it often becomes completely absorbed, and in adults it softens so that extraction may be done more easily. The incision should be lower rather than limbal in these cases. When operation must be deferred because of conjunctival infection it should be preceded by a course of treatment of the con-

junctiva through the closed eyelids with the tartaric acid lamp.

F. S. MOORE, M.D.

Castrozza, B., and Castrozza, A.: Indirect Rupture of the Sclera with Subconjunctival Dislocation of the Crystalline Lens. Both Eyes Caused by the Same Kind of Trauma (Ruptura indirecta con luxación subconjuntival del cristalino en los dos ojos, ocasionada por el mismo agente traumático). *Arch. d med. chir. y ginecol.* 1932, 22d, 564.

The patient whose case is reported was a woman fifty years of age who, in her childhood, had had corneal ulcers which left slight corneal scars. A few years before she was seen by the authors she received a blow on the left eye which caused rupture of the sclera with subconjunctival dislocation of the crystalline lens. In October 1910, she received a blow on the right eye which produced exactly the same kind of lesion. When she received the blow on the right eye she lost consciousness for a few seconds and suffered intense pain in the eye. The injury was followed by the formation of a large hematoma of the right side of the face and marked swelling of the eye. The patient treated herself with hot compresses for ten days before she came to the hospital.

On admission she showed ecchymosis of the eyelids. On examination, subconjunctival hemorrhage was found and the crystalline lens could be palpated beneath the conjunctiva at the level of the limbus.

An incision was made in the conjunctiva and the lens extracted. As the retina was intact the sclera was not sutured. Following suture of the operative wound in the conjunctiva a sublimate dressing was applied.

Conventional recovery resulted. The patient was able to see fingers at a distance of 2½ meters with her right eye and at a distance of from 1½ to 3 meters with her left eye.

The prognosis in such injuries is rather serious because of the danger of complicating infection rather than because of the wound itself. The patient should be put to bed immediately and the eye washed with an antiseptic solution. The authors advocate antiserotherapy or autohemotherapy to increase the defensive forces of the body. Surgical operations should be performed promptly. If the rupture is subconjunctival and there is no hernia of the contents of the eye through the wound, as in the case reported, the sclera need not be sutured. If a hernia has occurred through the wound the conjunctiva must be opened and the herniated tissues reduced or resected. If both sclera and conjunctiva are ruptured the sclera should be sutured with fine catgut and the conjunctiva with fine silk. By prompt operation the eye and some degree of vision may be preserved.

A. DE VIL A. MINA, M.D.

Freeman, G.: Squamous-Cell Epithelioma (the Leukos). *Am J Ophth* 1932, 5, 37.

The author reports a case of squamous cell epithelioma of the leukos is a cultured variety of

If tracheotomy is necessary it should be done as far as possible from the phlegmon. If the symptoms do not subside, all of the connective tissue spaces have not been opened and the opening must be extended.

The author reports nine cases.

ARTHUR SCHLESINGER (Z)

NECK

Edington, G. H. Cervical Ribs. *Glasgow M J*, 1932, cxviii, 289.

Edington reports five cases of the cervical rib syndrome. In four, the syndrome was caused by cervical ribs and in one by an anomalous first dorsal rib. The syndrome includes sensory nerve disturbances, impairment of the power of one limb, and, in rare cases, vascular disturbances leading to gangrene. In every suspected case an X-ray examination should be made. If it shows no cervical ribs the first dorsal rib, whether normal or abnormal in outline, should be regarded as the cause of the symptoms. The rib causing the symptoms should be resected. The occurrence of cervical ribs can be traced to a peculiarity in ossification of the seventh cervical transverse process. F. S. MODERN, M.D.

De Tarnowsky, G. Probable Bilateral Tumor of the Carotid Body. *Am J Surg*, 1932, xviii, 261.

Unilateral tumors of the carotid body are rare and bilateral tumors are even more unusual. The author reports the case of an Italian workman who was operated upon in 1904 for a tumor of the left side of the neck and in 1930 for a similar tumor on the right side of the neck. The pathological report on the latter neoplasm indicated that it was a tumor of the carotid body, and the evidence suggests that the tumor removed in 1904 was of the same type.

Up to April, 1931, Wellbrook was able to collect only 196 cases of tumor of the carotid body. Of the 36 cases reported in the literature from 1920 to 1928, the surgeon was able to enucleate the tumor without blood-vessel ligation in 36 per cent, whereas of the 97 cases reported during the period from 1880 to 1920, only 18 per cent were removed by blunt dissection alone. Of the operations performed for tumor of the carotid body in the year 1930, approximately 50 per cent were enucleations. It is estimated that about 50 per cent of these tumors can be removed without damage to the carotid vessels, the internal jugular vein, or the vagus nerve.

There is little or no agreement regarding the morphology of tumors of the carotid body. Tomatis and Michener believe that the carotid body is derived from columns of cells which ultimately develop into sympathetic ganglia. It gives rise to 2 varieties of tumor: (1) the simple, vascular, slowly growing tumors known as "paragangliomas," and (2) the very malignant growths known as the "potato tumors of Hutchinson." The latter are often intimately attached to the 3 carotid arteries and sooner or later involve the sternomastoid, the jugular vein, the vagus, or the sympathetic. Gask and

Wilson claim that these tumors are developed as an offshoot from the sympathetic and contain cells which are stained brown by chromic acid and resemble those of the medullary portion of the suprarenal body. They are of the opinion also that the carotid gland may become the site of newgrowths of very variable malignancy, and that the malignant tumors rapidly infiltrate the neighboring structures and are essentially inoperable.

Because of the rarity of the neoplasms, the diagnosis of tumor of the carotid body is seldom made. The chief finding is a solid tumor of long standing situated in the anterior triangle of the neck or near the apex of the submaxillary triangle, which varies in size from that of a hazelnut to that of a hen's egg, is movable laterally but not vertically, does not expand on pulsation, and, unless very malignant, is not adherent to the overlying skin. Occasionally examination reveals a bruit or thrill and bulging of the pharyngeal wall with dilatation and contraction of the pupil on the side of the growth, depending upon the degree of sympathetic irritation, and tenderness on deep palpation. Attacks of syncope may be caused by compression of the vagus. In some cases the condition is accompanied by a late paresis of one vocal cord and a tingling sensation in the neck.

The ideal treatment is surgical dissection, but the success of the operation depends largely on recognition of the nature of the tumor within the carotid sheath as soon as the skin incision is made. If the surgeon is fearful of tearing one of the carotids or the jugular vein, it may be advisable for him to throw a provisional ligature around the common carotid and have an assistant ready to tie the knot if an accident occurs or to compress the vessel against the anterior tubercle of the transverse process of the sixth cervical vertebra.

If the tumor is found to be irremovable except by section of all of the carotid vessels, it should be left alone, according to the advice of Beven and McCarthy. R. V. B. SHIER, M.D.

Cohen, S. J., and King, F. H. The Relation Between Myasthenia Gravis and Exophthalmic Goiter. *Arch Neurol & Psychiat*, 1932, xxviii, 1338.

The authors report a case of myasthenia gravis and exophthalmic goiter occurring in the same patient, and review similar cases recorded in the literature. They state that myasthenia gravis of a greater or less degree is observed in most cases of exophthalmic goiter, and that weakness of the quadriceps extensor muscles has been regarded as a sign of the disease. Some of the eye signs are merely evidences of weakness of the ocular muscles.

Myasthenia gravis and exophthalmic goiter are associated with hyperplasia of the lymphatic tissues, involvement of the adrenal glands, lymphorrhagia in the muscles, and lowered carbohydrate tolerance. In both conditions, creatinuria occurs. On the basis of these similarities, myasthenia gravis and exophthal-

enteration of the mastoid was done no variations from the normal course of recovery were noted. Therefore it may be concluded that although the diplococcus pneumoniae is an organism of the great est virulence no alterations in technique are necessary in its presence.

The author draws the following conclusions:

1. Masked mastoiditis occurs with sufficient frequency to make its recognition of importance (slightly more than 7 per cent of all cases of acute and subacute mastoiditis).

2. It may be very difficult to diagnose early.

3. There is no single sign or symptom of unique diagnostic significance in this disease.

4. In some cases anatomical factors seem to be of importance in the production of the disease.

5. Other organisms than the diplococcus pneumoniae may produce insidiously advancing mastoiditis.

6. The technique of mastoidectomy does not need to be varied according to the bacteriological findings.

NOSE AND SINUSES

Campbell, E. H.: The Association of Acute Sinusitis and Acute Otitis Media in Infants and in Children. *Arch. Otolaryngol.* 912, 214, 1920.

This article is based on a study of 150 cases of acute otitis media occurring in children ranging in age from two days to eleven years. In practically all of the cases there was an associated sinusitis.

The method employed for diagnosis consisted in passing a nasopharyngoscope and observing the source of the pus. The nose was first anesthetized by passing along the floor an applicator saturated with a 2 per cent solution of cocaine. In several broad cases there was no reaction from the use of this drug.

In the author's opinion, the use of a suction bulb to clear away secretions is a simple and practical procedure. No harm will result if the air is allowed to slip through easily. Suction should be used at the onset of a cold.

Campbell concludes that otitis media rarely occurs without an accompanying sinus infection. Infection of the ethmoid sinuses is more common than infection of the maxillary sinuses and is usually bilateral. In the causation of gastro-intestinal disturbances infection of the nasal sinuses is more important than infection of the ears. In the cases reviewed, examination with the nasoscope was found to be much more satisfactory than X-ray examination.

JOHN F. DEXTER, M.D.

MOUTH

Langhammer, H.: Phlegmons of the Floor of the Mouth (Cebor Mandibulo-phlegmons) 1932 Kld. Dissertation.

Contradictory opinions are held as to the nature of Ludwig's angina. Ludwig regarded the following

features as characteristic: slight inflammation in the pharynx itself, a wood-like hardness of the swollen cellular tissue, a hard swelling under the tongue, regular progression of the swelling, and slight involvement of the glands. According to our more recent conceptions, Ludwig's description agrees approximately with the course of severe phlegmons of the mouth although certain characteristics, such as constriction of the throat, are not regularly present and may be associated also with mild suppuration. As Ludwig's disease is not due to a single cause, it would be best to drop the name.

The chief connective tissue spaces of the floor of the mouth are: (1) the submental space (submental lymph glands), (2) the space between the muscles of the base of the tongue, (3) the sublingual space (sublingual gland) and (4) the submaxillary space (submaxillary gland). The spread of the suppurative process from these spaces into the parapharyngeal space is very important. From the parapharyngeal space the process may spread into the retropharyngeal space (toward the carotid artery and jugular vein) and burrow toward the mediastinum.

Bacteriological examination in five cases disclosed the bacterium coli once, streptococci four times, and anaerobes frequently.

The causes of the condition may be classified as follows:

1. Infection in the parodontal spaces.
 - (a) Carious teeth.
 - (b) Difficult eruption of wisdom teeth. This is a frequent cause, pus easily reaching the submaxillary space.
 - (c) Infection following extractions.
 - (d) Spread of bacteria by local anesthesia.
2. Tonsillitis.
3. Trauma.
4. Metastases following infectious diseases.
5. Salivary calculi.
6. Unknown causes.

The course is usually acute. The process is seldom limited to one space. The difference between an abscess and a progressing phlegmon is often not distinct. The so-called wooden phlegmons are probably caused by the same micro-organisms, but their course is chronic. A similar picture is presented by actinomycosis, but later this forms blue swellings which rupture and discharge a thin fluid pus.

When the condition is recognized early the prognosis is good (one death in nine cases) but some cases that seem very mild at first end fatally. It is of importance first of all to remove the cause (the mouth should be examined with care) but terrible opening of the jaw must be avoided because of the danger of spreading the infection. It may be necessary to delay the extraction of a doubtful tooth until later. An intra-oral incision is usually impossible because the disease has advanced too far. The two typical incisions are (1) an incision in the midline and (2) an incision parallel with the border of the lower jaw. The submaxillary space is exposed. From here the parapharyngeal space is reached.

If tracheotomy is necessary it should be done as far as possible from the phlegmon. If the symptoms do not subside, all of the connective tissue spaces have not been opened and the opening must be extended.

The author reports nine cases

ARTHUR SCHLESINGER (Z)

NECK

Edington, G. H. *Cervical Ribs* *Glasgow M J*, 1932, xviii, 289

Edington reports five cases of the cervical rib syndrome. In four, the syndrome was caused by cervical ribs and in one by an anomalous first dorsal rib. The syndrome includes sensory nerve disturbances, impairment of the power of one limb, and, in rare cases, vascular disturbances leading to gangrene. In every suspected case an X-ray examination should be made. If it shows no cervical ribs the first dorsal rib, whether normal or abnormal in outline, should be regarded as the cause of the symptoms. The rib causing the symptoms should be resected. The occurrence of cervical ribs can be traced to a peculiarity in ossification of the seventh cervical transverse process. F. S. MODERN, M.D.

De Tarnowsky, G. *Probable Bilateral Tumor of the Carotid Body* *Am J Surg*, 1932, xviii, 261

Unilateral tumors of the carotid body are rare and bilateral tumors are even more unusual. The author reports the case of an Italian workman who was operated upon in 1904 for a tumor of the left side of the neck and in 1930 for a similar tumor on the right side of the neck. The pathological report on the latter neoplasm indicated that it was a tumor of the carotid body, and the evidence suggests that the tumor removed in 1904 was of the same type.

Up to April, 1931, Wellbrook was able to collect only 196 cases of tumor of the carotid body. Of the 36 cases reported in the literature from 1920 to 1928, the surgeon was able to enucleate the tumor without blood-vessel ligation in 36 per cent, whereas of the 97 cases reported during the period from 1880 to 1920, only 18 per cent were removed by blunt dissection alone. Of the operations performed for tumor of the carotid body in the year 1930, approximately 50 per cent were enucleations. It is estimated that about 50 per cent of these tumors can be removed without damage to the carotid vessels, the internal jugular vein, or the vagus nerve.

There is little or no agreement regarding the morphology of tumors of the carotid body. Tomatis and Michener believe that the carotid body is derived from columns of cells which ultimately develop into sympathetic ganglia. It gives rise to 2 varieties of tumor: (1) the simple, vascular, slowly growing tumors known as "peritheliomata," and (2) the very malignant growths known as the "potato tumors of Hutchinson." The latter are often intimately attached to the 3 carotid arteries and sooner or later involve the sternomastoid, the jugular vein, the vagus, or the sympathetic. Gask and

Wilson claim that these tumors are developed as an offshoot from the sympathetic and contain cells which are stained brown by chromic acid and resemble those of the medullary portion of the suprarenal body. They are of the opinion also that the carotid gland may become the site of newgrowths of very variable malignancy, and that the malignant tumors rapidly infiltrate the neighboring structures and are essentially inoperable.

Because of the rarity of the neoplasms, the diagnosis of tumor of the carotid body is seldom made. The chief finding is a solid tumor of long standing situated in the anterior triangle of the neck or near the apex of the submaxillary triangle, which varies in size from that of a hazelnut to that of a hen's egg, is movable laterally but not vertically, does not expand on pulsation, and, unless very malignant, is not adherent to the overlying skin. Occasionally examination reveals a bruit or thrill and bulging of the pharyngeal wall with dilatation and contraction of the pupil on the side of the growth, depending upon the degree of sympathetic irritation, and tenderness on deep palpation. Attacks of syncope may be caused by compression of the vagus. In some cases the condition is accompanied by a late paresis of one vocal cord and a tingling sensation in the neck.

The ideal treatment is surgical dissection, but the success of the operation depends largely on recognition of the nature of the tumor within the carotid sheath as soon as the skin incision is made. If the surgeon is fearful of tearing one of the carotids or the jugular vein, it may be advisable for him to throw a provisional ligature around the common carotid and have an assistant ready to tie the knot if an accident occurs or to compress the vessel against the anterior tubercle of the transverse process of the sixth cervical vertebra.

If the tumor is found to be irremovable except by section of all of the carotid vessels, it should be left alone, according to the advice of Beven and McCarthy.

R. V. B. SHEER, M.D.

Cohen, S. J., and King, F. H. *The Relation Between Myasthenia Gravis and Exophthalmic Goiter* *Arch Neurol & Psychiat*, 1932, xxviii, 1338

The authors report a case of myasthenia gravis and exophthalmic goiter occurring in the same patient, and review similar cases recorded in the literature. They state that myasthenia gravis of a greater or less degree is observed in most cases of exophthalmic goiter, and that weakness of the quadriceps extensor muscles has been regarded as a sign of the disease. Some of the eye signs are merely evidences of weakness of the ocular muscles.

Myasthenia gravis and exophthalmic goiter are associated with hyperplasia of the lymphatic tissues, involvement of the adrenal glands, lymphorrhagia in the muscles, and lowered carbohydrate tolerance. In both conditions, creatinuria occurs. On the basis of these similarities, myasthenia gravis and exophthal-

mic gutter are held to be definitely related, a theory which accounts for their not infrequent simultaneous occurrence.

LEO M. ZIMMERMAN, M.D.

Kallen, L. A.: Laryngostroboscopy in the Practice of Otolaryngology. *Arch. Otolaryngol.* 1932, xii, 791.

Kallen states that stroboscopic examination of the larynx is a valuable supplement to ordinary laryngoscopy and a requisite for work on the vocal cords. It permits observation of the function of the vocal cords under both physiological and pathological conditions and yields valuable information with regard to the diagnosis, the prognosis, and the indications for and effects of treatment of certain organic and all functional disturbances of the voice.

JAMES C. BRADWELL, M.D.

Spencer F. R., and Zimmerman, F.: The Histopathology of the Larynx Antedating Clinical Evidence of Laryngeal Tuberculosis. *Ann. Otol., Rhinol. & Laryngol.*, 1932, xli, 900.

Recognizing that tuberculous infections in the epiglottis, the base of the tongue, and the pharynx produce dysphagia and odysphagia sooner and to more severe form than tuberculous lesions in the larynx, the authors made a macroscopic and mi-

croscopic study of these organs in the cases of six patients who died of pulmonary tuberculosis and in whom gross laryngeal tuberculosis was not demonstrable before death.

Two of the patients had had symptoms of laryngeal tuberculosis. Autopsy failed to show microscopic lesions in the larynx in only one case. Apparently microscopic lesions may be present before death in patients who have no demonstrable involvement of the larynx, and tuberculosis of the larynx is best prevented by early diagnosis and treatment of tuberculosis of the lungs.

GROVER A. COLLETT, M.D.

Jackson, C.: Cancer of the Larynx: Its Treatment by Laryngectomy. *South. Surgeon*, 1932, I, 123.

The author states that a relative cure can be obtained in at least 80 per cent of cases of early laryngeal cancer of the larynx. Early diagnosis depends upon recognition by the physician of the general principle that continued or intermittent hoarseness should be regarded as possibly due to malignancy until examination of the larynx by the physician has proved it to be caused by a benign condition. Direct laryngoscopy is indicated in every case of hoarseness in which the anterior commissure cannot be seen with the mirror.

JAMES C. BRADWELL, M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Branch, C. D., Cutler, E. C., and Zollinger, R.
Experiences with Encephalography *New England J. Med.*, 1932, ccvii, 963

The authors report their experience with encephalography in cases of epilepsy, post-traumatic headache, arachnoiditis, and certain tumors. They state that the procedure should be limited to cases in which the intracranial pressure is not elevated. In cases in which a large tumor is suspected it is contraindicated even if the pressure is thought to be normal, as the shift in tension may start sudden bleeding or a dangerous amount of air may become trapped in a dislocated ventricle. The authors advocate its use in the study of various confusing neurological conditions, especially the convulsion states.

One or two hours before the encephalographic examination is begun the authors give 0.2 gm. of pentobarbital. Lumbar puncture with the patient in the horizontal position is done routinely to obtain a reading of the cerebrospinal fluid pressure. The patient is then raised to a sitting position on the bed with the head supported and the needle in place. A flexible rubber tube about 6 in. long and with the proper connections is attached to the lumbar puncture needle and a 5-cm. syringe. To prevent leakage from the system the connections and the barrel of the syringe are covered with sterile vaseline. Before the air is injected, 10 c.cm. of cerebrospinal fluid are slowly removed to allow for subsequent expansion of the air. It is not necessary to filter the air through gauze or cotton as is frequently recommended. Usually the syringe will fill under its own pressure. Sucking out of the cerebrospinal fluid is condemned. The procedure is simplified by compressing the flexible tube between the thumb and first finger while the syringe is being emptied and refilled with air. About the same length of time should be consumed in injecting the 5 c.cm. of air as the syringe requires to become filled with cerebrospinal fluid. It is unnecessary to continue the replacement of fluid after from 70 to 90 c.cm. of air have been injected. While the patient is being transferred to the X-ray department he should be maintained erect in a wheel chair to insure equal distribution of the air in the two sides. Antero-posterior, postero-anterior, and lateral views should be taken.

The authors have found encephalography to be of value and not contra-indicated in the localization of abscess of the brain. The article contains encephalograms of three patients taken five years after suboccipital decompression for chronic arachnoiditis.

Encephalography is of definite value as a check on the treatment of conditions suggesting tumor.

In the authors' cases there was one fatality. The patient died two hours after the encephalographic examination. Encephalograms showed the presence of a large tumor mass projecting into the midportion of the right ventricle. There had been no evidence of pressure in either the eyegrounds or the cerebrospinal fluid manometer readings.

The authors believe that encephalography should be used in the cases of children suffering from birth injuries and those who are mentally defective, as in such cases it may permit a more definite prognosis and will serve to check up on the treatment instituted.

Finesinger, J. E. Cerebral Circulation XVIII
The Effect of Caffeine on Cerebral Vessels
Arch. Neurol. & Psychiat., 1932, xxviii, 1290

By employing Forbes' cranial window in cats, the author observed the effect of various caffeine compounds given intravenously or applied locally upon the caliber of the pial arteries. Simultaneously the cerebrospinal fluid pressure was read on a manometer connected with the contents of the cisterna magna, and the blood pressure in one femoral artery was recorded.

During amytal anesthesia the intravenous administration of caffeine sodiobenzoate caused a dilatation of the pial artery, a rise in the cerebrospinal fluid pressure, and an abrupt drop in the blood pressure which was followed by an immediate return to normal. Local administration of caffeine solution to the pia caused a dilatation of the pial artery and as a rule no change in the cerebrospinal fluid pressure or the blood pressure.

During ether anesthesia, the intravenous administration of caffeine caused a constriction of the pial artery from its initial diameter, a drop in the cerebrospinal fluid pressure, and an abrupt drop in the blood pressure which was followed by a return to normal. After local administration during ether anesthesia, caffeine had no effect on the pial artery and in most cases caused no change in the cerebrospinal fluid pressure or the blood pressure.

After recovery from ether anesthesia, when the superficial reflexes were present, the intravenous administration of caffeine caused an acute constriction of the pial artery followed in most cases by an immediate dilatation. As a rule the cerebrospinal fluid pressure dropped and then rose immediately. The blood pressure dropped abruptly and then immediately rose to its normal level and in most cases exceeded its preliminary level. The local administration of caffeine solution to the pia after recovery from ether caused a dilatation in the pial artery with usually no change in the cerebrospinal fluid pressure or the blood pressure.

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Leo M. Zinnerman, M.D.

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JAMES C. BRADWELL, M.D.

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croscopic study of these organs in the cases of six patients who died of pulmonary tuberculosis and in whom gross laryngeal tuberculosis was not demonstrable before death.

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GEORGE A. COLLETT, M.D.

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JAMES C. BRADWELL, M.D.

for the longest period of time finally developed general physical disturbances and cerebral symptoms (blindness with normal ocular fundi). The anatomical findings in the brain of the dog killed after six days were normal. The brains of the dogs killed after a period of weeks showed active infiltration of the meninges and the large intracerebral vessels without damage to the nervous parenchyma and without reactive manifestations on the part of the neuroglia. In the dog killed after six months mild inflammatory manifestations were present. The capillaries showed the well-known regressive changes in the endothelium, capillary obliteration. Worthy of note was severe involvement of the larger intracerebral vessels (arterioles) in the form of marked sclerosis, hyaline degeneration, and resulting extensive necrosis and circumscribed necrobiosis in the parenchyma (particularly in the subcortical portions of the brain). Even in the portions which were not irradiated, the lipid content of the cells was somewhat increased.

These investigations show that the nervous parenchyma is capable of withstanding large doses of irradiation and becomes injured only indirectly through injury of the blood vessels. The inflammation found in three of the dogs may be regarded as an infectious encephalitis favored by the irradiation or a direct effect of the irradiation, but the injury to the blood vessels cannot be considered the result of infection.

JENDRALSEI (O)

Osnato, M. General Criteria for the Diagnosis of Brain Tumor. General Symptoms. *J Am M Ass*, 1932, xcix, 2012

The triad of headache, vomiting, and choked disk is not a prerequisite for the diagnosis of brain tumor. Improvement of the results of surgery for intracranial neoplasms depends upon earlier diagnosis and removal of the tumor before destruction is too extensive for repair.

The general features, some of which are of localizing value, in cases of brain tumor are

The onset of the symptoms, which may be acute even when the tumor grows slowly

Headache

Tenderness

Choked disk. This is present in only from 60 to 80 per cent of the cases. Visual defects, including loss of perception of color.

Nausea and vomiting

Abducens nerve paralysis

Convulsions

Dizziness

Bradycardia

Static or cerebellar ataxia (third and fourth ventricle tumors) in cases of non-cerebellar tumor

Paresis of the limbs in cases of large tumor not in a motor area

Mental symptoms (cases of third ventricle tumors)

1 Drowsiness

2 Apathy

3 Retardation of thought and movement.

4 Euphoria (frontal lobe usually)

Roentgenographic findings

1 Pacchionian depressions

2 Separation of sutures

3 Findings of ventriculography and lumbar encephalography. These may not be of definite localizing aid

Spinal fluid

1 Slight increase in the number of cells

2 Increase in protein content.

While the site of the headache is generally of no value in localization, it may occasionally be of definite aid. Sharp or boring bitemporal pains may occur in cases of pituitary tumors, and occipital or suboccipital headache in cases of cerebellar or other subtentorial tumors.

Generalized convulsions are of no localizing value, but in every case of so-called idiopathic epilepsy and jacksonian epilepsy the possibility of a brain tumor must be considered. Repeated neurological and ophthalmological examinations should be made. The author reports a case of brain tumor in which there was no headache, vomiting, or, so far as could be determined, papilloedema for seven years.

Psychotic symptoms are not limited to cases of frontal lobe tumor on the left side, and the euphoria supposedly characteristic of these tumors may occur in cases of cerebellar and third ventricle tumors.

Drowsiness and stupor may occur in cases of frontal lobe tumors, but are more characteristic of third ventricle tumors.

Psychoneurotic or psychotic symptoms developing on an emotional background may mask the development of symptoms of brain tumor.

Slowly growing cystic glomata of the frontal lobe, particularly on the right side, may have a rapid onset of symptoms suggesting an acute cerebral disease.

Hallucinations of taste and smell preceding jacksonian seizures, sometimes associated with spatial illusions and visual hallucinations, may occur with temporosphenoidal lobe tumors.

Cerebellar ataxia, both static and of the extremities, may occur with tumors of the frontotemporo-parietal regions. The differentiation between these tumors and cerebellar tumors is easy. Asynergy of the trunk is an exclusive feature of cerebellar tumors and is not found in cases of frontotemporo-parietal tumor. Gradually increasing hypotonus and final disappearance of the deep reflexes are noted only in cases of cerebellar tumors. "Cerebellar fits" occur only in cases of subtentorial tumors.

Papilloedema is more constant in cases of subtentorial tumors than in cases of tumor of the cerebral cortex.

Angle tumors are differentiated from cerebellar tumors by the early development in the former of disturbances of the fifth, sixth, seventh, and eighth nerves, which progress evenly for a time and are followed by cerebellar disturbances.

The acoustic tumors constitute about one-third of the tumors occurring in the cerebellopontine angle.

In cats with an abnormally low blood pressure during amylal anesthesia, caffeine sodiobenzoate administered intravenously was followed by a very variable response in the pial artery. In most cases the caffeine caused a constriction of the pial vessel, which is the reverse of the change occurring when the blood pressure is within the normal limits.

The response of the pial vessel to caffeine was dependent upon the initial diameter of the artery before the caffeine was introduced.

During amylal anesthesia and after recovery from ether anesthesia there was evidence of dilatation of the measurable arteries, arterioles, and venules. Changes in velocity of the circulation and color of the blood indicated that the caffeine caused a dilatation of the capillaries as well.

The results presented are in keeping with the results of most investigators studying the vascular response to caffeine in other parts of the body. This suggests that the vessels of the pia respond to caffeine in the same way as the vessels elsewhere in the body.

Leo M. Davison, M.D.

Cobb, S., and Finefinger, J. E.: Cerebral Circulation. XIX. The Vagal Pathway of the Vaso-dilator Impulses. *Arch. Neurol. & Psychiat.* 1934, xxvii, 243.

Using the glass window for observing the behavior of the cerebral vessels as described by Forbes, the authors on numerous occasions confirmed the observation of Forbes and Wolff that faradic stimulation of the vagus nerve or if cut, its proximal end, results in dilatation of the pial vessels. This being the afferent pathway they sought the efferent course of the impulse by stimulating in turn all of the other cranial nerves from the third to the last.

They concluded from their experiments that nerve impulses may pass up either vagus nerve trunk to the medulla, leave the medulla along both facial nerves, travel as far as the geniculate ganglia and thence along autonomic nerves to the cerebral vessels, causing vasodilatation. Since, as was previously shown and again demonstrated by the authors, stimulation of the sympathetics in the neck results in pial vasoconstriction it is evident that in the brain, as elsewhere in the body, there is sympathetic vasoconstriction opposed by parasympathetic vasodilatation. "The stimulation of one vagus nerve causes a bilateral cerebral vasodilatation, whereas the stimulation of a cervical sympathetic nerve causes only ipsilateral vasoconstriction."

Leo M. Davison, M.D.

Chorobaki, J., and Penfield, W.: Cerebral Vasodilator Nerves and Their Pathway from the Medulla Oblongata, with Observations on the Pial and Intracerebral Vascular Plexus. *Arch. Neurol. & Psychiat.* 1932, xxvii, 17.

Stimulated by the observation of Cobb and Finefinger that the efferent pathway for vasodilatation of the pial arteries is in the facial nerve Chorobaki and Penfield made a study of the seventh cranial

nerve and its connections. They found that there is a direct nerve bundle to the pericarotid plexus. This leaves the facial nerve at the geniculate ganglion. After leaving the geniculate ganglion, this bundle passes directly into the greater superficial petrosal nerve without interruption. Further along the nerve, a distinct bundle of nerve fibers emerges from the greater superficial petrosal nerve to the pericarotid plexus. Experimental stimulation of the greater superficial petrosal nerve and its cut peripheral end confirmed these findings.

The perivascular nerves of the pial vessels and also the continuation of these nerves on the large and medium-sized intracerebral arteries (but not on the small arteries) are described. Small nerve endings resembling motor end-plates are found on the intracerebral arteries, suggesting that they too may be capable of the contraction and dilatation which can be demonstrated by direct observation only in the case of the pial arteries.

Complete removal of all sympathetic nerve fibers which enter the cranial cavity on the carotid and vertebral arteries does not appreciably reduce the number of normal intracranial perivascular nerve fibers. Degeneration, as judged by axon stains, is occasionally found within the first month after sympathectomy a fact suggesting that a small number of sympathetic fibers reach the pial vessels directly.

When both greater superficial petrosal and sympathetic nerves are removed the pial and intracerebral vessels are still found to be richly supplied with nerve fibers. Therefore it is impossible to denervate the cerebral vessels by removing both sympathetic and parasympathetic innervation.

It is suggested that the parasympathetic pathway is interrupted by synapses with scattered ganglion cells just before it reaches the internal carotid artery and that the cervical sympathetic chain, which has been thought to have its postganglionic stations in the superior sympathetic, may also be interrupted by the scattered ganglion cells along the course of the internal carotid and cerebral arteries.

The occasional branches to the pia from other cranial nerves reported by Steehr and others hardly seem numerous enough to be important, but should be subjected to further investigation.

The extraordinary amount of collateral branching of axons of the cerebral perivascular nerves indicates that one ganglion cell must innervate a large segment of the vascular tree.

Leo M. Davison, M.D.

Scholz: Experimentelle Ray Injuries of the Brain (Ueber experimentelle Röntgenstrahlverletzungen des Gehirns). *Zeitschrift f. Neurol.*, 93, livr. 73.

At the Pawlow Institute the occipital region of four dogs was irradiated with large doses of X rays (from 18 to 20 skin-erythema doses). The animals were killed at the end of six days, five weeks, six weeks, and six months. After an early reaction of short duration, three of the animals showed no noteworthy clinical manifestations. The dog observed

cative exercises to be performed before a mirror, especially after the appearance of the first return of function

The plastic operations aimed at relieving the disfiguring asymmetry of the face by elevating the lower eyelid and the angle of the mouth are described in detail.

A chapter is devoted to the extracranial injuries of multiple cranial nerves. The authors describe and discuss the various syndromes of such lesions. They call attention to the fact that, whatever other nerves are affected, the ninth, tenth, and eleventh are rather consistently injured together. Such lesions are produced by wounds in the uppermost part of the lateropharyngeal space. The authors compare injuries of the last four cranial nerves with injuries of the brachial plexus nerves as such injuries frequently result in permanent paralysis of only one nerve with a partial lesion of one or more of the others.

The final chapter is devoted to a consideration of the results of peripheral nerve surgery. The difficulties of analyzing the results reported in the literature are emphasized. As reports are of value only when they are based upon common factors in examination and the interpretation of the findings of examination, the authors place little reliance on these analyses in determining the value of operative procedures. However, the results seem definitely to prove the influence of the time factor, as primary sutures yield relatively more rapid and constantly favorable results. While a delay of from twelve to eighteen months does not seem to have any marked effect upon the date or extent of recovery, the prognosis seems to be less favorable when the interval is longer.

The results of suturing of individual nerves and the effect of the level of an injury in determining the time of recovery are shown in tables.

HALE HAVEN, M D

In cases of tumor of the cerebellar hemispheres and the vermis there is a rapid development of symptoms of increased pressure in the posterior fossa and eventually of generalized intracerebral pressure manifested by clinical signs and demonstrable on examination. There is also a rapid development of unilateral or bilateral cerebellar or vestibulocerebellar symptoms. Pyramidal, sensory and bulbar symptoms are late in developing or entirely absent, in contrast to the findings in cases of cerebellopontine angle neoplasms.

The abdominal nerve has the longest intracranial course of any of the cranial nerves. Paralysis of this nerve results from greatly increased intracranial pressure causing distortion of the brain stem and pons. Therefore in many cases its value as a localizing symptom is slight.

Stupor occurs in cases of lesions in the region of the third ventricle and the mid-brain, especially in children. Its early occurrence is due to the early development of obstruction of the cerebrospinal fluid with consequent internal hydrocephalus.

E. S. PLATT M.D.

Gilba, F. A.: The Frequency With Which Tumors in Various Parts of the Brain Produce Certain Symptoms. *Arch. Neurol. & Psychiat.* 93, xxviii, 969.

On the basis of 1,545 cases of verified tumor of the brain, the author attempts to correlate a series of 27 symptoms with regard to their frequency in the presence of tumors located in any one of 25 regions of the brain. Although the group of cases was large the individual factors are so numerous that he was able to arrive at only the following largely negative conclusions:

1. Generalized convulsions are not most readily produced by tumors causing compression of the motor cortex.

2. Visual hallucinations are not most readily produced by tumors that compress the occipital lobe.

3. The frequency with which tumors of the mid-brain and the pineal region cause symptoms usually associated with a lesion in the floor of the third ventricle is not satisfactorily explained by assuming that such tumors injure the floor of the third ventricle by producing an internal hydrocephalus.

4. Projectile vomiting is not a general pressure symptom.

5. Tumors that block the ventricular system do not cause high-grade choked disk much more frequently than others. LEO M. DAVENPORT M.D.

Allen, S. B., and Lovell, H. W.: Tumors of the Third Ventricle. *Arch. Neurol. & Psychiat.* 1932, xxviii, 992.

Allen and Lovell report eight cases of tumor in the posterior portion of the third ventricle. The neoplasms included three ependymomas, one astrocytoma, one spongioblastoma, one cysticercus cyst, and two tumors of the pineal body a pinealoma and a teratoma.

The symptoms and signs of such tumors depend upon (1) early obstruction to the circulation of cerebrospinal fluid with a resulting increase in the intracranial pressure, and (2) involvement of structures adjacent to the ventricular walls.

In the cases reported, drowsiness, probably due to involvement of the ventricle floor was a prominent symptom. Pupillary changes may be of significance, but because of high papilloedema the patients are often blind and pupillary changes are misleading. However, the pupil of the Argyll-Robertson type is of aid in the diagnosis. Of the extra-ocular palsies, conjugate palsies are important. Of most aid is paralysis of associated upward gaze. Impairment of hearing may occur but was found in only one of the authors' eight cases. The most confusing sign is cerebellar ataxia which may lead erroneously to exploration of the posterior fossa. This sign was present in four of the authors' cases. Pyramidal tract signs were present in four cases and hyperthermia (vasomotor disturbance) was found in one case. In neither of the two cases of tumor of the pineal body was there any abnormality of sexual development although the patient with the pinealoma was a boy under the age of puberty.

Death may occur suddenly as in two cases of solitary cysticercus cyst seen by the authors. One of these cases is not included in the eight reported.

Because of the absence or indefiniteness of localizing symptoms, ventriculography is especially important in the diagnosis. Is the ventriculogram, the hydrocephalus associated with a tumor of the posterior fossa is differentiated from the hydrocephalus accompanying a tumor in the third ventricle by the presence of a filling defect in the third ventricle in the latter. LEO M. DAVENPORT M.D.

PERIPHERAL NERVES

Pollock, L. J., and Davis, L.: Peripheral Nerve Injuries. Concluding installment. *Am. J. Surg.* 93, 2, 352, 353.

In the last installment of their monograph on peripheral nerve lesions, Pollock and Davis continue their discussion of the cranial nerves. Special consideration is given the lesions of the facial nerve which are amenable to surgical repair. The authors believe that the ideal treatment for the injured facial nerve, as for other injured peripheral nerves, is end-to-end suture. This is sometimes possible in early lesions, but is practically impossible when scar tissue and callus have developed within the facial canal. When it is impossible the authors favor the nerve-crossing operation, either splanchnic or hypoglossal-facial anastomosis. They describe the technique of each in detail.

In the postoperative treatment of these cases the facial muscles should be given mechanical elastic support to keep them from sagging and overstretching while regeneration is taking place, and at the same time should be treated by massage and electrical stimulation. The authors advocate also ed

The author describes a simple special maneuver he devised several years ago which gives surprisingly easy access to the first rib and the subscapular ribs through the usual J-shaped paravertebral incision beginning about 5 cm. below and behind the anterior border of the trapezius and ending close to the inferior angle of the scapula. After the trapezius and rhomboid muscles have been divided, an assistant lifts the vertebral border of the scapula away from the thoracic wall. The surgeon cuts through the serratus magnus muscle close to its origin from the second rib where it presents a convenient posterior angulation and then, through this small incision, pushes the axillary fat and vein away from the posterolateral aspect of the muscle with his finger while continuing the incision in the muscle upward to the first intercostal space and downward to the fifth or sixth rib. The scapula may then be easily lifted well posteriorly and laterally away from the ribs so that the resection is greatly facilitated (Fig 1).

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Alexander believes that his technique for anterolateral thoracoplasty is more simple and thorough than any other described (Fig 2). The incision is semilunar, and in the case of a woman passes lateral to the breast. The pectoralis major is retracted anteriorly and mesially, and the origins of the pectoralis minor are divided. When the arm, which is held throughout the operation by an aide, is abducted and mesially flexed, the pectoralis major

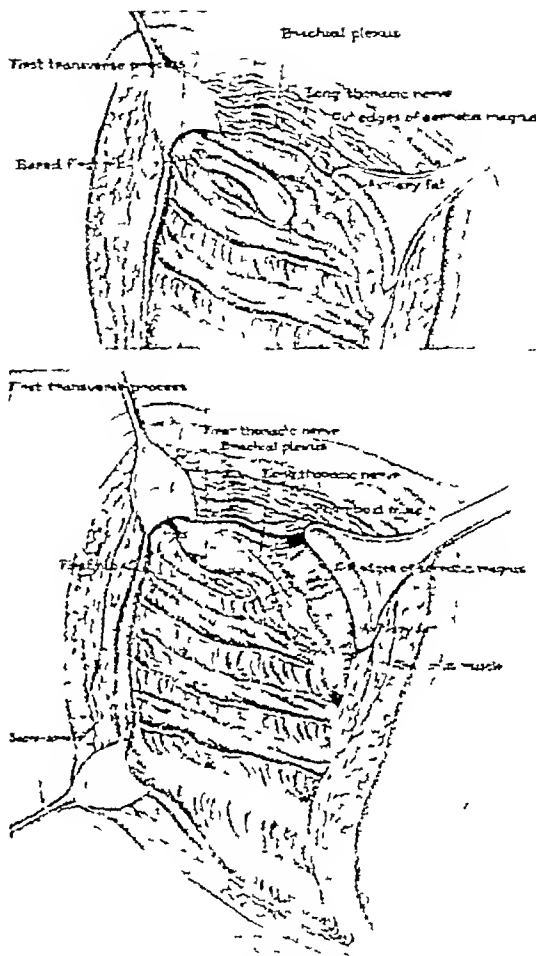


Fig 1 Division of the upper five origins of the serratus magnus has given excellent exposure of the axillary portions of the upper ribs, including the first, through the customary paravertebral incision in which the anterior 4 to 6 cm of the trapezius have not been divided. The axillary fat, the brachial plexus and sometimes the long thoracic nerve are plainly visible. In the upper drawing the posterolateral portions of the second and third ribs have been extensively resected and from 7 to 10 cm of the first, having been freed from its periosteum, is about to be removed. If there is doubt about the patient's condition only three ribs are resected (and occasionally only two). Rarely are more than four ribs removed as extensively as illustrated in the lower drawing, at the first stage of the thoracoplasty.

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SURGERY OF THE CHEST

CHEST WALL AND BREAST

Cutler M.: The Relation of Chronic Mastitic Cysts and Papillomata to Cancer of the Breast. *J Am M Ass.*, 1932 xcix, 52.

Physiological studies at birth show that the development of the breasts is not complete at the end of fetal life and that the appearance of the breasts varies enormously in different infants. Between birth and puberty the breast is in a state of quiescence. With puberty it begins further development. At every menstrual period there are changes in the breast which may pass unnoticed, but in many cases cause pain and tenderness. During pregnancy there is marked hypertrophy the source and nature of which are still a matter of controversy since lactation is not necessarily a phenomenon of gestation. After pregnancy the breast returns to a state of rest, but in some cases involution is incomplete and some degree of activity persists. Epithelial and connective tissue hyperplasia with lymphocytic infiltration, a condition sometimes erroneously called chronic mastitis, is present in more or less degree in every breast that has undergone lactation. The process is more physiological than pathological.

Conditions of the breast which appear more physiological than pathological are designated by the term "mastoplasia" in preference to the term "chronic mastitis" because the latter implies inflammation, which is not characteristic of these conditions. Mastoplasia is characterized by hyperplasia of the periductular and periacinous connective tissue, new formation of ducts and acini desquamation of epithelial cells in the terminal ducts and acini, diffuse pain, and generalized nodularity ("lumpy breast"). Microscopic search has failed to reveal transformation of the desquamative epithelial hyperplasia of mastoplasia into epithelial neoplasia (papilloma or carcinoma). Mastoplasia is most common between the ages of thirty and forty years. It does not occur before puberty and it ceases with the menopause. There is no evidence of any relation between mastoplasia and cancer of the breast.

Cystic disease of the breast which has been called "chronic cystic mastitis," is not related to inflammation. Therefore this term should not be applied to it. The consequences of cyst formation are (1) stagnation of contents, and (2) the super-vention of a neoplastic process (papilloma carcinoma). Cystic disease of the breast begins late in the second or early in the third decade of life. When it progresses it passes into the neoplastic state late in the third or early in the fourth decade of life. The neoplastic state may in turn pass into the carcinom-

atous state late in the fourth or early in the fifth decade of life. There is no clinical evidence to indicate the transition. The change may stop at any point. Twenty per cent of all carcinomata of the breast have this origin. When the cystic state remains uncomplicated by papilloma or carcinoma there is a tendency for one cyst to outgrow the others. A single large cyst rarely contains carcinoma. The method of treating a single cyst is wide excision of the portion of the breast containing the cyst. When the cystic state is generalized the whole gland should be removed.

Papilloma, single or multiple, may remain benign indefinitely and grow to massive proportions. The chief clinical sign is a hemorrhagic or serosanguineous discharge from the nipple. Palpation may reveal the tumor as a firm, elastic, movable mass in the ampullary region. By transillumination, single or multiple papillomata may be revealed and their exact position localized. A large tumor with a hemorrhagic discharge calls for local mastectomy. When the tumor is small and its nature is doubtful, local excision followed by immediate frozen section is indicated. For multiple papillomata, local mastectomy is the method of choice.

Schimmelbusch a disease of the breast is characterized by multiple cysts on which the papillomatous process has supervened and in which the epithelial neoplasia, although atypical, is still confined within the normal boundaries of ducts and acini. If the process continues, carcinoma is the inevitable result. The most common clinical sign is localized nodularity. This always calls for wide excision and immediate examination of frozen sections. If carcinoma is revealed, the radical operation should be performed at once. J. DANIEL WILLIAMS, M.D.

TRACHEA, LUNGS, AND PLEURA

Alexander J.: Special Considerations Relating to Surgical Closure of Large Upper Lobe Tuberculous Cavities. *J Thoracic Surg* 1932, 4, 1.

The most frequent cause of failure of artificial pneumothorax or surgical operation to effect a cure of tuberculosis is non-closure of large or stiff walled cavities in the upper third of the lung. Such cavities require compression or at least relaxation of the lung around a very large part of their circumference. It is unusual to obtain a total pneumothorax over such extensive lesions even with the aid of cauterization of adhesions, pleurectomy or wedge resection. When these measures fail, extrapleural paravertebral thoracoplasty must be undertaken. Very great lengths of ribs should be resected. This should be done in three or more stages, preferably at intervals of two weeks.

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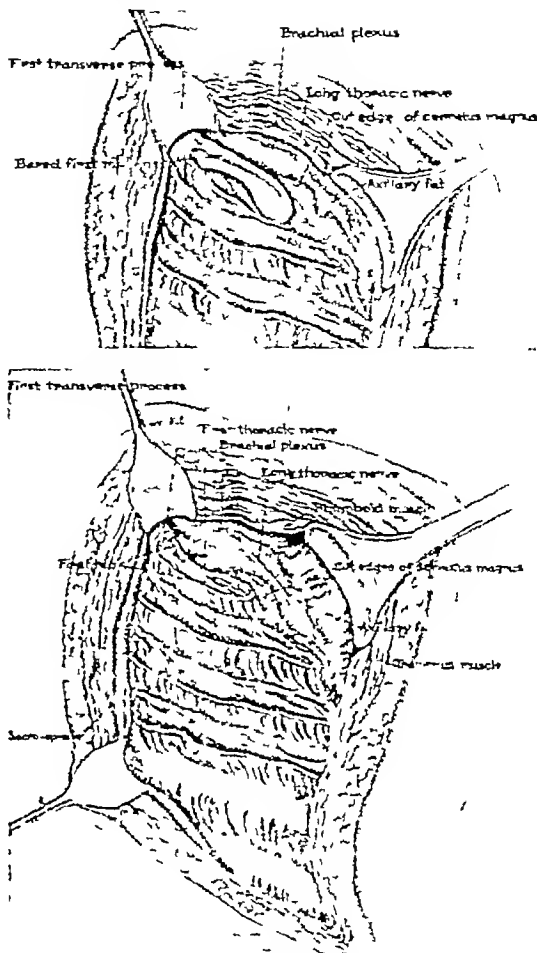


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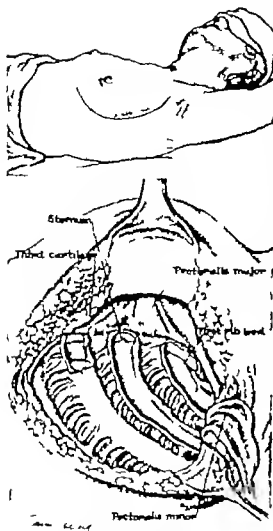


Fig. 2. Anterolateral thoracoplasty including costal cartilages, for a large or well-walled cavity that an extensive posterolateral thoracoplasty has failed to close. Abduction of the arm exposes the first rib by lifting the clavicle away from it, while medial flexion of the arm permits easy retraction of the pectoralis major from the cartilages. The first and second ribs have been resected from the sternum to where they had been divided during the posterior thoracoplasty and a piece of the third cartilage has been removed so as to allow the third rib to swing backward and forward and yet protect the heart.

chondral junction. Next, the cartilage is divided close up to the sternum and the anterior end of the rib is held while the axillary portion is gently separated from the periosteum. After removal of the second rib, the first rib is approached, the arm

shoulder and clavicle being raised by the side. The first rib is freed from the periosteum, its cartilage is cut, the rib is removed, and the cartilage is then removed with the exception of the portion behind the sternoclavicular joint. If resection of the third rib is indicated, this is done next. Finally 1 or 2 cm. of the cartilage next below the rib just resected is removed subperiosteally close to the sternum. A few approximation sutures are placed in the subcutaneous fascia and the skin is closed around a tube drain which is left in place for thirty-six hours. A snug dressing is placed to stabilize the decorticated anterior thoracic wall. The pressure of a thick dressing is gradually increased during the next ten days. At the end of that time a special brace consisting of a pad of sponge rubber cut to the proper shape is applied and held with the pressure of heavy elastic straps. This is left in place for at least three months, not only for immobilization but also to cause the thoracic wall to sink as deeply as possible and to give the cavity the best possible chance to close.

MAURICE P. MEYERS, M.D.

Warner, W. P.: Bronchiectasis: Its Etiology, Diagnosis, and Treatment. *Clinical Medicine* 112, 193, April, 1935.

Recent additions to our knowledge of bronchiectasis are the result of the introduction of lipiodol, the use of the bronchoscope, and the entrance of the surgeon into what was heretofore a medical field.

Bronchiectasis is of two types, the congenital and the acquired. Congenital bronchiectasis, which is much less common than acquired bronchiectasis, may be of the fetal or the atelectatic type. The fetal type is due to the malformation of a bronchus with a resulting non-connecting cyst. The atelectatic type is characterized by absence of infiltration and pigmentation of the parenchyma indicating that the parenchyma has never expanded, and by dilation of the bronchus with multi-locular cavities.

The acquired type may follow a disease associated with pulmonary infection, such as whooping cough, measles, influenza, pneumonia, and lung abscess. Although some investigators believe that an infection attacks the lung secondarily from a primary focus in the upper respiratory tract, this belief is not borne out by the author's experience. In fibrosis of the lung, in atelectasis, and in central bronchial obstruction there are increased dilating forces which predispose to the development of bronchiectasis.

However, the important factor in bronchial dilatation is weakening of the bronchial wall due to infection. This view is supported by Robinson's studies of bronchiectatic lobes removed at operation, in which destruction of the elastic and muscle coats of the bronchus were the predominating pathological lesions.

During inspiration under normal conditions the negative pressure is greater in the parenchyma of the lung and the thoracic cage than in the lumen of the bronchus, physiological dilatation of the bronchus

therefore resulting. On expiration, the bronchus returns to its original size chiefly because of the elastic recoil of its stretched wall. In bronchiectasis, the weakened wall allows greater dilatation to take place on inspiration and the bronchial lumen fails to become narrower on expiration because of the loss of elasticity of the bronchial wall.

The two basic factors in the production of bronchiectasis are therefore infection of the bronchi causing destruction of their walls and bronchial obstruction.

In the diagnosis, X-ray examination is of more importance than the signs noted on physical examination which vary with the site and nature of the lesions. Roentgenograms of the chest should be made with and without the introduction of lipiodol. The various types of terminal bronchial dilatations revealed by the injection of lipiodol are described as cylindrical, fusiform, and sacculated.

Errors of interpretation of roentgenograms made with lipiodol may be due to "water logging" of a part of the lung with the lipiodol, the presence of apical cavities simulating bronchiectatic dilatations, or failure of the lipiodol to enter certain dilated bronchi.

Evacuation of the infected secretions from the dilated bronchi by changes of posture is considered the best form of treatment of bronchiectasis. The time interval between the postural treatments depends upon the amount of sputum evacuated at each drainage and the clinical improvement noted. Bronchoscopic drainage of secretions is not considered justifiable.

Collapse therapy is considered ineffectual. The only surgical procedure of value is lobectomy. The one stage lobectomy described by Shenstone and Jones is mentioned. Because of its mortality, this should be limited to patients who, because of their copious sputum, are social outcasts, and to patients with chronic ill health due to repeated pulmonary hæmorrhages or repeated pulmonary infection.

FRANKLIN E. WALTON, M.D.

Adams, W. E., and Livingstone, H. M. Lobectomy and Pneumectomy in Dogs. *Experimental Surgery*. *Arch Surg*, 1932, xxi, 898.

The method of lobectomy and pneumectomy described in this article has proved highly satisfactory in dogs, but has not yet been tried in clinical cases. The usual difficulties of associated pneumothorax and pleural infection have been obviated. The success of the procedure is due to the discovery of a safe and reliable method of closing large bronchi permanently. This is accomplished by cauterizing the entire circumference of the bronchial wall by applying a 35 per cent solution of silver nitrate through the bronchoscope. Bronchi $\frac{1}{2}$ in in diameter are usually closed by one application.

The removal of pulmonary lobes may usually be accomplished within from a few days to a week after complete stenosis of the bronchi. After opening of the chest cavity the vessels are first ligated and cut between ligatures and the bronchi then isolated. A

clamp is placed on the bronchus at the edge of the parenchymal tissue, enough space being left for a chromic catgut ligature proximal to it. The bronchus is then divided between the clamp and ligature. The bronchial stump remaining needs no further attention. The wound is closed in layers.

One or two lobes were removed in twenty dogs without a death, and all of the lobes on one side were removed in eight dogs with one death. The death was attributed to respiratory failure caused by defective tubing in the positive-pressure apparatus. In dogs killed from two months to one year after the operation no fluid was present in the pleural cavities. A few adhesions were found around the amputation stump and the remaining lung tissue showed a compensatory emphysema. PAUL W. GREELEY, M.D.

Hart, D. The Treatment of Chronic Empyema by Tidal Irrigation, Suction, and Thoracoplasty. *J Thoracic Surg*, 1932, ii, 157.

The author presents a method for treating chronic empyema by closing down the cavity to a small size by tidal irrigation and suction and then removing the entire roof of the cavity by surgical intervention.

In cases of empyema with a bronchial fistula care must be taken to insert the tube for irrigation and aspiration in the most dependent part of the cavity.

The author believes that tuberculous empyema with secondary infection may be well treated by this method. The removal of redundant caseating granulation tissue may be aided with Dakin's solution or a 1 to 2 per cent solution of acetic acid, but the patient must be watched for bleeding. The tube for drainage must be so placed that it will not interfere with extrapleural paravertebral or anterolateral thoracoplasty when such surgical measures are indicated. Thoracoplasty may then be done in an aseptic field and primary healing obtained. In this way an empyema cavity may be closed without expanding the infected lung, and the severe sepsis which follows the infection of a large fresh operative wound may be avoided.

Ten cases of chronic non-tuberculous empyema and six cases of tuberculous empyema with secondary infection which were treated in the manner described are reported. WILLARD J. KISER, M.D.

HEART AND PERICARDIUM

Hudson, C. L., Moritz, A. R., and Wearn, J. T. The Extracardiac Anastomoses of the Coronary Arteries. *J Exper Med*, 1932, lvi, 919.

The authors made a study of the extracardiac anastomoses of the coronary arteries by injecting these vessels of human hearts which had been excised at autopsy. They demonstrated widespread anastomoses of the auricular branches and the coronary branches to the pericardial fat with the pericardiophrenic branches of the internal mammary arteries and the anterior mediastinal, pericardial, bronchial, superior and inferior phrenic, intercostal, and œsophageal branches of the aorta.

The most extensive anastomoses between the cardiac and extracardiac vessels are around the ostia of the pulmonary veins.

They conclude that this rich potential extracardiac coronary collateral circulation is of importance in compensating for sclerosis of the large trunks of the coronary arteries.

EARL O. LARSEN, M.D.

ESOPHAGUS AND MEDIASTINUM

Harrington, S. W.: The Surgical Treatment of Mediastinal Tumors. *Ann. Surg.* 93:2, 1931, 413.

A relatively high percentage of intrathoracic growths have their origin in the mediastinum. Because of the many different tissue elements in this space, it may present almost any type of neoplasm.

Tumors that remain benign often attain enormous size and may cause death from mechanical pressure on the numerous important structures in the potential spaces designated as the mediastinum. These structures either control, or are closely associated with, respiration, the circulation of arterial and venous blood and lymph, deglutition, and the functional innervation of organs lying outside the thorax. Because of the important structures contained in the mediastinum, it is of paramount importance that a tumor be recognized and treatment be instituted before the growth has caused serious and permanent injury to these vital structures or has disturbed the function of all of the viscera in the thorax.

The symptoms are dependent upon the type of the growth and more on its situation than on its size. They are due to pressure or infiltration of the involved or surrounding structures in the region invaded and the amount and severity of the disturbance of function of intrathoracic organs. Probably the most significant symptom in the clinical distinction between an early malignant lesion and a benign lesion is pain. The pain from malignant growths of small size is often very severe and may be more or less constant but with acute exacerbations at irregular times, usually most severe at night. Benign tumors may often attain great size without producing pain other than a dull ache or a sense of pressure accompanied by dyspnea on exertion. Dyspnea is one of the most common symptoms of benign or malignant tumors. It is usually present with early lesions, and is most noticeable on exertion. Cough is a frequent early symptom of malignant lesions. It is often paroxysmal and of a hoarse or hoarse type. It may be non-productive, but usually is associated with the expectoration of mucus or blood. Hoarse or a cough syndrome was noted in three cases.

The physical signs are often helpful in determining the presence of a lesion, but are unreliable as an index of its extent or character. There is usually an increase in vocal fremitus over the tumor and with this an area of definite dullness and absence of breath sounds. In the presence of anterior mediastinal tumors the heart is often displaced and the sounds are transmitted over a wide area.

Bronchoscopic examination is of value in ruling out the presence of a primary intrabronchial lesion and in determining whether there is encroachment of an extrinsic growth on the lung. Esophagoscopic examination is of aid in ruling out the presence of a primary lesion of the esophagus and in determining if there is encroachment of an extrinsic lesion on the esophagus. Thoracoscopic examination may be advisable in selected cases of posterior mediastinal tumor in which the growth projects well into the thoracic cavity.

The chief problems associated with the surgical removal of mediastinal tumors are concerned with the danger of pulmonary collapse, with mediastinal flutter resulting from open pneumothorax, and with the difficulty of access through the bony encasement of the thorax. Surgical indications depend on the findings in the particular case.

Harrington prefers to use intratracheal anesthesia under positive pressure. The surgical approach through the thoracic bony cage depends upon the site and size of the tumor. Anterior mediastinal tumors may be reached through the anterior or posterior thoracic bony wall. The blood pressure should be determined every five minutes during the operation. Postoperative care is very important.

The results of surgery are most gratifying in the cases of benign tumor as the risk is not great if the neoplasm is removed before it has become sufficiently large to cause pressure on the surrounding structures.

Harrington reports in detail a case of unusual interest because of the uncommon occurrence of an azygos lobe and the infrequency with which such a lobe is the site of a pathological process.

The most important surgical problems were removal of the cyst with minimal injury to the adjacent lung, and treatment of the bronchial fistula and the base of the cyst. The base of the cyst was firmly adherent to the vertebra and aorta posteriorly and the inferior portion of the cyst communicated and was incarcerated with the lung at the hilum. The large dilated azygos major vein passed between the cyst and the hilum of the lung and was fused with the wall of the cyst beneath a pleural fold. The numerous large vessels in the base of the cyst were ligated with mattress sutures. After the communicating bronchus had been closed and the greater portion of the cyst had been removed, the lining was removed from the remaining base of the cyst and the walls were approximated so as completely to obliterate the residual space and aid in sealing off the bronchus. This was accomplished satisfactorily as there was no pneumothorax after the operation, and although there was considerable pleural irritation, as evidenced by the extensive, bloody pleural effusion, only one aspiration was necessary. The lung thereafter remaining fully expanded. Complete closure of the thorax without drainage was an important factor in the prevention of serious immediate and delayed postoperative complications and in the rapid complete recovery.

MISCELLANEOUS

Heinbecker, P. Concerning the Nature and Function of Certain Afferent Pathways from the Thoracic Viscera *J Thoracic Surg*, 1932, 11, 183

In general, two types of effects are possible in the animal organism when an afferent nerve ending is stimulated. One results in the production of a sensation, and the other in the production of a reflex response in an effector organ.

Head has divided the sensations into the protopathic or the primitive sensations of pain, heat, and pressure, and the epicritic or discriminating sensations.

Visceral sensations are primitive or protopathic, whereas from the surfaces of the body both types of sensations may be elicited. From the viscera arise also many afferent impulses without sensation. It is important for the surgeon to know what these pathways are and the effect of their interruption not only as regards sensation but also as regards the future functioning of the organ reflexly affected.

By means of the cathode-ray oscillograph the different electrical responses of nerve fibers to stimulation can be recorded precisely.

In the phrenic nerve four types of nerve fibers are found. Those of one type are large and thickly myelinated and conduct motor impulses. Those of another type are smaller, less thickly myelinated, and sensory. The third type are small and thinly myelinated, and the fourth type are unmyelinated.

The sensory innervation of the visceral and parietal pleura has been extensively studied. It is known that the parietal and diaphragmatic pleura are sensitive to pain and that the intercostal nerves carry most of the fibers concerned. However, the phrenic nerves supply sensory fibers to the central portion of the diaphragmatic pleura. The visceral pleura possesses very few, if any, sensitive areas.

The sympathetic nerve supply to the diaphragm arises from several sources—the phrenic nerve, the stellate ganglion, and white rami communicantes from the fifth, sixth, seventh, eighth, and eleventh thoracic ganglia supplied through the splanchnic nerves. The margins are supplied also through the lower intercostal nerves. Histological studies of the sympathetic white rami and sympathetic trunks show that they contain myelinated fibers of the second type similar to those known to be pain fibers.

By means of the cathode-ray oscillograph the author has demonstrated that the vagus nerve contains afferent fibers the impulses of which are intimately concerned in the regulation of respiration and the cough reflex. Similar impulses arising in the heart and aorta are also transmitted by the vagus nerve. The type of fiber conducting such impulses is myelinated and has an axon with somatic physiological properties.

The author briefly discusses the clinical significance of these physiological findings.

WILLARD J. KISER, M.D.

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The results of surgery are most gratifying in the cases of benign tumors as the risk is not great if the neoplasm is removed before it has become sufficiently large to cause pressure on the surrounding structures.

Harrington reports in detail a case of unusual interest because of the uncommon occurrence of an azygos lobe and the infrequency with which such a lobe is the site of a pathological process.

The most important surgical problems were removal of the cyst with minimal injury to the adjacent lung, and treatment of the bronchial fistula and the base of the cyst. The base of the cyst was firmly adherent to the vertebra and aorta posteriorly, and the inferior portion of the cyst communicated and was incorporated with the lung at the hilum. The large dilated azygos major vein passed between the cyst and the hilum of the lung and was fused with the wall of the cyst beneath a pleural fold. The numerous large vessels in the base of the cyst were ligated with mattress sutures. After the communicating bronchus had been closed and the greater portion of the cyst had been removed, the lining was removed from the remaining base of the cyst and the walls were approximated so as completely to obliterate the remaining space and aid in sealing off the bronchus. The work was accomplished satisfactorily as there was no pneumothorax after the operation, and although there was considerable pleural irritation, as evidenced by the extensive, bloody pleural effusion, only one aspiration was necessary the lung thereafter remaining fully expanded. Complete closure of the thorax without drainage was an important factor in the prevention of serious immediate and delayed postoperative complications and in the rapid complete recovery.

Many patients would doubtless be well if they could live an easier life, both mentally and physically. Active research must be continued to find some method of lowering the digestive power of the gastric juice. It has long been known that the corner stone of any medical treatment for ulcer must be the giving of food at frequent intervals. Probably one of the greatest faults in the present method of treating ulcer is the fact that nothing is done to neutralize the acid secreted during the night.

For operative treatment, probably the best and most practical procedure is gastro-enterostomy. Unfortunately, in 2 or 3 cases out of 100 the patient returns with a jejunal ulcer and in an occasional case a new ulcer forms almost as fast as the old one is excised. In the desire to protect patients from this danger, some surgeons have turned to the operation of subtotal gastrectomy.

The work of Mann and his associates has now made it clear that one of the most important factors in the production of ulcer, at least in loops of intestine draining the stomach, must be failure of neutralization of gastric juices by the pancreas and biliary secretions.

Experimentation suggests that more work should be done with fats and oils in the treatment of ulcer. These substances might be used at night to inhibit secretion.

Mann, F. C., and Bollman, J. L. Experimentally Produced Peptic Ulcers: Development and Treatment. *J. Am. Med. Ass.*, 1932, xcix, 1576.

In studies of experimentally produced peptic ulcers certain points appear to be definitely proved, and although the specific facts may not be capable of direct transposition into clinical medicine, the lesions produced are similar to the clinical lesions.

Experimentally, peptic ulcer may be produced by hyperacidity brought about by the continuous administration by stomach of small amounts of hydrochloric acid. Methods which remove neutralizing agents (bile, pancreatic juice, or duodenal secretion) from the stomach or duodenum are also effective in producing a chronic type of peptic ulcer. Mechanical and chemical factors are active in the production and continuation of these ulcers. As these factors destroy the newly repaired tissue, complete healing is obtained only when they are inhibited. The process of repair in peptic ulcer is similar to the process of repair in other tissues and occurs in the same sequence as the repair of an abrasion of the skin. Since several weeks appear to be necessary for complete healing of peptic ulcer, successful treatment must continuously suppress the mechanical and chemical factors throughout that length of time.

Steinberg, M. E., and Proffitt, J. C. The Etiology of Postoperative Peptic Ulcers. *Arch. Surg.*, 1932, cxvi, 819.

A study of the etiological factors of experimentally produced postoperative ulcers revealed

that ulceration occurred only when the gastric intestinal anastomosis was bathed by acid gastric contents from which admixture of the alkaline duodenal contents was prevented. In thirty control experiments with various types of gastro-intestinal anastomoses, no ulcer resulted. This was interpreted as evidence that the acid-pepsin is of the greatest importance in the causation of experimentally produced ulcers.

It is impossible to evaluate mechanical factors accurately because the various gastro-intestinal operations not only involve mechanical factors but are definitely associated with changes of acidity in the gastric contents. However, there are two types of operation in which the chemical changes should be practically the same although the mechanical factors are definitely different. It was noted that after the end-to-end anastomosis, gastrojejunostomy with the Exalto short-circuiting operation (Mann-Williamson internal duodenal drainage), the incidence of ulcer was 100 per cent, whereas after the end-to-side, terminolateral gastrojejunostomy, it was only 43 per cent. Of sixteen dogs in which a minimal part of the pyloric end of the stomach was resected, definite ulcers occurred in two. Here again it is difficult to evaluate the mechanical and chemical factors separately, but Steinberg and his coworkers previously demonstrated that in gastric resection plus duodenal drainage, or short circuiting, the gastric contents remain acid. This reduction of ulcer formation is explained as secondary to the increased size of the stomach opening and partial paresis of the propelling force of the antrum which has been partly resected. The pyloric resection decreases the trauma from the impingement of gastric contents upon the jejunum in the emptying of the stomach. When a kink was produced 5 cm. distal to the gastro-intestinal opening, ulceration occurred in all of the animals. The Billroth II operation (Finsterer-Hoffmeister subtotal resection) with a wide gastrojejunal stoma was never followed by peptic ulcer.

SAMUEL J. FOGELSON, M.D.

Jiménez, C. P. Ulcers of the Stomach and Duodenum Perforated into the Peritoneal Cavity (Las úlceras perforadas del estómago y del duodeno en peritoneo libre). *Rev. méd. de Barcelona*, 1932, ix, 151.

This article is based on ninety cases of perforated gastric and duodenal ulcer treated by the author. The details of the cases, such as the age, sex, and occupation of the patient, the type of the ulcer, the time elapsing between the perforation and the operation, the site of the perforation, the operation, the method of drainage, and the results, are summarized in a table. The youngest patient was seventeen years of age and the oldest seventy-one. Eighty per cent of the patients were between twenty-one and forty-five years old. The majority were operated on within from three to seven hours after the perforation. One was operated on after four days and died.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Zampa, G., and Oslerovotti, B.: The Behavior of Pathogenic and Non-Pathogenic Anaerobic Organisms in the Peritoneal Cavity (Sul comportamento dei germi anaerobici patogeni e non patogeni nella cavità peritoneale) *Arch. ital. di chir.* 93, xviii, 337

The authors review two cases of so-called gaseous peritonitis collected from the literature and comment on the various theories advanced to explain the presence of air in the peritoneal cavity.

In order to determine whether peritonitis due to pathogenic or non-pathogenic anaerobic organisms can give rise to intraperitoneal accumulations of gas, they undertook a series of experiments on rabbits. In these experiments they inoculated into the peritoneal cavity pure cultures of anaerobic organisms with liver tissue or Tread's medium to add a medium favorable for their development. The organisms used were the pathogenic bacillus perfringens, bacillus anthracis, bacillus tetani, bacillus botulorum, bacillus histolyticus, vibrio septique and the non pathogenic bacilli of De Rosier, Belfanti, and Maggiori and the bacillus percloetani.

In none of the animals was the inoculation followed by necrosis of tissue, gaseous edema or an accumulation of gas in the peritoneal cavity. The authors attribute the absence of gas to inhibition of the development of the anaerobic organisms by the reaction of the peritoneum.

As the formation of air in the peritoneal cavity from peritonitis due to anaerobic organisms is impossible, the authors are of the opinion that the conditions reported as gaseous peritonitis or gas peritonism are cases of true pneumoperitoneum in which the point of escape of gas from the intestinal tract was overlooked at operation.

PETER A. ROSE, M.D.

GASTRO-INTESTINAL TRACT

Alvarez, W. C.: Light from the Laboratory and the Clinic on the Causes of Peptic Ulcer. *Am. J. Surg.* 1932, xviii, 207

Ulcers may form in the stomach of man when one of the gastric blood vessels is narrowed or plugged and endarteritis may doubtless be demonstrated in the neighborhood of some ulcers. If arterial degeneration were a common cause of ulcer, the lesion would probably be found more frequently in elderly persons than, as is the case, in youths and young adults. Arterial spasm may be one of the links between the emotions and ulcer. Against the theory that arteriolar spasm is the cause of ulcer is the observation that long-continued electrical stimuli

tion of the vagus nerves caused relaxation of the gastric vessels at the same time that it produced hyperperistalsis and powerful contraction of the muscle. The small blood vessels supplying the mucous membrane in the ulcer-bearing zone are perhaps like endarteries.

The mucous membrane along the ligamentum is so firmly attached to the muscle that it cannot slip away from foreign bodies. However, experiments show that the susceptibility of this region cannot be ascribed wholly to anatomical peculiarities.

There is doubt whether in man the ligamentum carries fluids from cardia to pylorus as it does in some of the lower animals.

The infectious theory of ulcer causation does not throw light on any of the peculiarities of the incidence of the disease.

It is well to clean up lesions in the mouth and nose which can produce a steady stream of pus down the esophagus. However, one of the difficulties in analyzing the influence of infection on ulcer is due to the fact that in so many cases food, much larger and more important than those in teeth or tonsils are present and unrecognized. The most fertile source of infection producing flare-ups of ulcer symptoms seems to be the common cold.

Ulcer tends to occur in families, and the hereditary factor is at times important. We need to know the nature of the inherited deficiency.

In many cases the tendency toward the formation of ulcers is due to the fact that the individual does not know how to relax.

Some of the patients with pseudo-ulcer or with ulcers that tend to recur have at all times marked and uncontrollable hyperacidity, but there are persons who live out their lives with a gastric acidity far above normal and yet never show symptoms or signs of ulcer. The presence of other factors than acidity must often be necessary before an ulcer can be formed or maintained in a chronic state. In the production of experimental ulcers, Mann and Bollman were impressed by the importance of acidity.

There are doubtless several causes for ulcer and several types of the lesion in different parts of the world. Walters and Swell found that in some parts of Germany duodenal ulcer is usually associated with a diffuse inflammation and ulceration of the mucous membrane of the distal end of the stomach. They were therefore able to understand why some European surgeons like to resect widely.

Alvarez has not yet been able to find much evidence to indicate that the pancreatic juice is a cause of ulcer.

It is not known what has happened in cases of ulcer to upset the mechanisms which normally prevent the gastric juice from eating into the mucosa.

He discusses particularly sixteen cases of lymphosarcoma which were seen in the Peter Bent Brigham Hospital, Boston, in a period of nineteen years. The neoplasms in these cases constituted 1.63 per cent of the malignant tumors occurring in the stomach or small bowel. The stomach was involved in nine of the cases, and the small intestine in seven. The terminal ileum was more often the site of the disease than the upper jejunum. The patients were about equally divided with regard to sex. Their average age was fifty-three and five-tenths years.

The tumors are believed to originate in a lymphoid follicle of the submucosa and to spread through tissue spaces and along the muscular layers of the bowel. As the mucosa is involved late, ulceration does not occur early. At the point of invasion the intestine appears dilated rather than contracted. Metastases occur by both the blood and the lymph stream. There may be early and extensive involvement of the lymph nodes. Clinically, lymphosarcoma of the stomach cannot be differentiated from carcinoma.

When the small bowel is involved the symptoms usually consist of abdominal pains not definitely related to the ingestion of food and possibly accompanied by vomiting. Blood may appear in the stools, a palpable mass may be felt in the abdomen, and X-ray examination shows dilatation of the small bowel or some delay in the emptying time.

The author concludes that irradiation has greatly increased the possibilities of treatment. He believes that radical excision of the tumor should be done when possible, and that many inoperable cases may be benefited or even cured by irradiation. He advises exploratory laparotomy with biopsy in all cases.

HAROLD WOOKEY, M B

Jacques, L., Droegemueller, W. A., and Buchbinder, J. R. The Viability of Strangulated Intestinal Loops, An Experimental Study. *Surg, Gynec & Obst*, 1932, 15, 539.

The authors report experiments carried out on dogs to establish more accurate criteria than those now available for the viability of strangulated loops of intestine. The determinations were made on a loop of terminal ileum. The strangulation was produced in the same way in all of the animals, and observations made from eighteen to twenty-four hours later.

The estimations of the viability of the loop were based on changes in color, the presence or absence of arterial pulsation of the mesentery of the occluded loop, the consistency of the wall of the bowel, the nature of the exudate, the presence or absence of bacteria, and the presence or absence of a fecal odor. In addition, the reactions to certain special tests were studied, such as bleeding of the bowel when its wall was pricked, the reaction to drugs, particularly adrenalin and pituitrin, the temperature reactions, and the contractions elicited by faradic stimulation.

The most valuable guides were found to be the return of color after release of the strangulation and

the consistency of the bowel wall. The absence of mesenteric pulsations was not reliable. Of the reactions to the special tests, the response to electrical stimulation was the most valuable. The reactions to the other tests were variable and inconclusive.

HAROLD WOOKEY, M B

Cheever, D. Operative Evacuation of the Small Intestine in Paralytic Stasis. *New England J Med*, 1932, CCVII, 1125.

Cheever reports two cases of ileus in which mechanical evacuation of the contents of the dilated intestine resulted in apparently marked relief of the symptoms. These were the two most striking examples in a group of eight cases similarly treated. In the six others the evacuation was not so thorough. The author briefly reviews cases reported in the literature in which similar good results were obtained. He states that in eversion of the entire small intestine the danger of shock may be reduced by wrapping the loops of bowel in a smooth wet sheet of rubber dam which is kept warm by the application of hot fomentations to its outer surface. He advocates evacuation of the entire small intestine by the introduction into the terminal ileum of a semirigid tube on which the successive loops may be pulled and, if necessary, "milked." He states that the danger of peritonitis is slight, and that the treatment described prevents abdominal distention from the intestinal paralysis and the absorption of accumulated toxins.

ALTON OCHSNER, M D

Matthews, W. B., Delaney, P. A., and Dragstedt, L. R. Duodenal Tuberculosis. A Review of the Literature and Report of a Case of Hyperplastic Tuberculosis of the Duodenum. *Arch Surg*, 1932, XLV, 1055.

In a recent survey of the literature, 105 cases of involvement of the duodenum in advanced terminal tuberculosis were found, but only 18 cases of duodenal tuberculosis producing local symptoms. Of the latter, the tuberculosis was primary in the duodenum or the only apparent active tuberculous lesion in the body in 12 and the tuberculous nature of the duodenal involvement was verified histologically in 6.

French surgeons recognize 4 types of intestinal tuberculosis: the ulcerative, the cicatricial, the enteropertoneal, and the hyperplastic. The first 3 types are stages in the destructive acute tuberculosis so often secondary to advanced pulmonary tuberculosis. They are found in from 25 to 90 per cent of fatal cases of pulmonary tuberculosis. As a rule the tuberculous nature of the lesion is easily recognized.

The hyperplastic type is a rare form which is chronic and proliferative and usually co-exists with an inactive tuberculous infection elsewhere. It produces an annular thickening which may be freely movable or bound down and often appears very much like such hyperplastic processes as pyloric

Surgical operation is always necessary in perforated ulcer of the stomach or duodenum. Statistics show that the earlier the operation is performed the better the result. In the ninety cases reviewed by the author the mortality was 23 per cent. In the cases in which operation was done within the first six hours, it was 3 per cent, in those operated on between the sixth and twelfth hours, 47 per cent, in those operated upon between the twelfth and twenty-fourth hours, 42 per cent and in those operated on after more than twenty-four hours, 70 per cent. Of the eight deaths occurring in the cases in which operation was performed between the sixth and twelfth hours after the perforation, two were due to bronchopneumonia and six to diffuse peritonitis.

Ulcers perforating into the peritoneal cavity are generally located on the anterior surface near the junction of the pylorus and duodenum. A clinical diagnosis of perforated gastroduodenal ulcer may be made if the patient gives a history of dyspepsia, sudden and violent supra-umbilical pain and wooden rigidity of the abdomen. The symptoms may suggest appendicitis, but a diagnosis of perforated pyloroduodenal ulcer may be made if the beginning of the symptoms was abnormally sudden, extremely violent pain is present in the supra-umbilical region, and the most marked contracture is in the right upper quadrant of the abdomen. The nature of the abdominal effusion confirms the diagnosis.

In eighty of the author's ninety cases the ulcer was sutured in two layers, the suture was re-inforced with an omental graft, the peritoneum was cleaned sometimes by irrigation with ether and subhepatic or ilioac drainage was established. Gastro-enterostomy is always necessary if the suture produces a contracture. In spite of the good results obtained by some surgeons with partial gastrectomy the author believes this operation is indicated in only a limited number of cases.

The article is followed by a bibliography of eight pages.

ROBERT GOSL MORGAN, M D

Finsterlin, R., and Gross, F.: The Value of the Early Roentgen Demonstration of Spontaneous Pneumoperitoneum in Perforated Gastric Ulcer and Associated Diseases of the Digestive Tract (Der Wert des frühzeitigen roentgenologischen Nachweis des spontanen Pneumoperitoneum bei perforiertem Magengeschwür und sonstigen Erkrankungen des Verdauungstraktes). *Archiv f. klin. u. exp. Med.* 1934, vol. 50.

As a result of earlier surgical intervention made possible by more accurate and timely diagnosis, the mortality from perforated gastric and duodenal ulcer has decreased markedly during the last thirty years. To the 21 cases of spontaneous pneumoperitoneum secondary to perforation of gastro intestinal disease which have been recorded in the literature the authors add 36 more. These included 8 cases of perforated gastric ulcer, 2 of perforated gastric ulcer in which barium had escaped from the viscus, 2 of perforated gastric malignancy, 12 of perforated

duodenal ulcer and 3 of ulcer perforation studied late, i.e. after seventy-two hours.

In addition there were cases of perforation secondary to less common causes. Among these were a case of rupture of the small bowel by blunt abdominal trauma, a case of gunshot wound of the small bowel, 4 cases of perforated intussusception following ileitis, a case of perforation of the appendix, 2 cases of perforation of the gall bladder and 5 cases of free gas in the peritoneal cavity following operation.

In the 19 cases of peptic ulcer which were classified as early cases because they were studied within seventy-two hours after the perforation a sub-diaphragmatic gas bubble was visualized both when the patient was standing and when he was reclining. Free gas in the peritoneal cavity could be demonstrated in the absence of adhesions with equal frequency despite a change in the patient's position and the use of different techniques of roentgen examination. The authors recommend a left lateral exposure of the patient as it permits differentiation of the smallest quantity of gas from the shadow of the liver diaphragm and lateral abdominal wall. When the patient lies on his right side the gastric gas bubble and a gas-distended left colonic flexure make the diagnosis of pneumoperitoneum more difficult. By anteroposterior examination of the patient in the recumbent position only large quantities of gas can be visualized. The study should not be limited to fluoroscopy as frequently roentgenograms will be necessary to demonstrate extremely small collections of gas.

The so-called "mirror formation" or reflection secondary to irritation of the serosal surfaces from contamination by gastro-intestinal leakage was seen in 10 cases. The diaphragmatic findings are not constant as there may be elevation or limitation of the excursion of the diaphragm or an accumulation of fluid in the costophrenic angles.

All previous objections to the roentgen examination of patients with this condition have been overcome by the improved technique in which the tube is moved instead of the patient. The examination is therefore a simple, harmless procedure which is extremely valuable to the surgeon in clearing up a doubtful diagnosis and preventing serious delay of surgical treatment or unnecessary operation.

Of the 3 early cases reviewed, a positive diagnosis could be made in 2 (66 per cent). However, absence of spontaneous pneumoperitoneum does not eliminate the possibility of perforation.

SUMNER J. FORDSON, M D

Cheever, D.: Clinical Aspects and Treatment of Primary Lymphosarcoma of the Stomach and Intestine. *Ann Surg.* 1934, vol. 9.

Cheever reviews the literature on tumors of the stomach and small bowel other than carcinomas. He calls attention to the confusion which exists in the classification of such tumors because of the great difference of opinion among pathologists.

Even though the complications (local and general peritonitis) occur decidedly more often in children under fifteen years of age than in adults, no difference in the mortality could be demonstrated in the two groups. Only when the cases of patients between the ages of forty-one and eighty years are excluded and the mortality of children up to ten years of age is compared with that of patients between the ages of eleven and forty years is it possible to determine with certainty a somewhat higher mortality in these two five-year periods of childhood.

Between the ages of fifty-one and eighty years perforations occur relatively more often than at earlier ages. The frequency of this complication is associated with a distinct increase in the mortality.

The frequently reported higher mortality among males was not demonstrable in the cases reviewed although local and general peritonitis developed more frequently in males than in females. The theory that males succumb to peritoneal infection more readily than females was therefore not supported.

In the total number of cases the mortality was 2.42 per cent, in the acute uncomplicated cases, 0.69 per cent, in cases of peri-appendicular abscess, 4.14 per cent, in cases of general peritonitis due to appendicitis, 15.29 per cent, in interval cases, 1.04 per cent, and in cases of chronic appendicitis without acute attacks, 0.34 per cent. If only the surgically treated cases are considered, the total mortality was 2.67 per cent.

In the decade from 1921 to 1930, the mortality of appendicitis showed no tendency either to rise or to fall.

LOUIS NEUWELT, M.D.

Ryle, J. A., Rayner, H. H., Morley-Fletcher, H., Davies-Colley, R., and Others. Discussion on the Treatment of Acute Appendicitis. *Proc Roy Soc Med*, Lond, 1932, xxvi, 181.

RYLE said that the problem of when and when not to operate cannot be solved by statistical tables. It requires experience and a study of the clinical records of many carefully observed cases. The development of surgical judgment has not advanced equally with the improvement of surgical technique. Many physicians are embarrassed by the multitude of diagnostic and therapeutic measures available. Many surgeons have been embarrassed by their very ability to operate and the lessened immediate risks of surgery and anesthesia. Experience supports the general opinion of surgeons that the obstructive type of lesion leading to gangrene is far more dangerous than the inflammatory type. In Wilkie's opinion, 90 per cent of the deaths from acute appendicitis are due to acute obstruction of the appendix. Most difficult to determine is the best method of treating cases of ileus or intestinal obstruction consequent upon acute appendicitis. In such cases operation is frequently fatal. Ryle asked whether it might not be possible to tide some of the patients over for a few more days until better localization of the infection occurs. Experience suggests strongly that

the majority of deaths from acute appendicitis are still due to delay in diagnosis with or without the added evil of purgation. In the various types of cases the following procedures may be relied upon with safety.

1 Cases of subsiding inflammation and those of recurring subacute appendicitis: the interval operation.

2 Cases of circumscribed abscess: simple drainage by the most favorable path, at the most favorable moment, and with minimal exploration.

3 Cases of Wilkie's obstructing type with its threat of dangerous gangrene, and cases of the acute inflammatory type seen in the earliest phase: earliest possible operation.

4 Late cases of uncertain type with distention and symptoms indicating intestinal obstruction: a consultation between surgeon, physician, and general practitioner to determine whether immediate action or delay would be with less risk.

In every case the treatment, whether medical or surgical, requires a proper appreciation of the pathological changes.

RAYNER called attention to the frequent assertion that surgery has made little progress in the treatment of acute appendicitis during the past twenty to thirty years. He said that this statement is based on mortality returns and does not allow for the increase in the frequency of diagnosis which has followed the increase in our knowledge of the disease. The figures of 2 large general hospitals show that the number of deaths per year has been decreased by more than half while the number of cases has been notably increased. The improvement is due in part to earlier diagnosis and operation and improvement in operative technique and judgment. In a series of 433 cases of acute appendicitis treated in the ten-year period ending in 1903, there were 182 deaths, a mortality of 42 per cent and the incidence of early cases was only 3 per cent, whereas in a series of 1,755 cases operated upon nearly twenty years later, in the ten-year period ending in 1929, there were 96 deaths, a mortality of 4.9 per cent, and the incidence of early cases was 76 per cent.

An acutely inflamed appendix may perforate at any time from three hours to three days after the first symptoms appear. In cases in which operation is performed before perforation has occurred the mortality does not exceed 11 per cent and the incidence of postoperative complications is proportionately low. Hence it is the duty of the surgeon to emphasize the importance of early surgical treatment. It is only by early operation that the patient with acute obstructive appendicitis perforating after a few hours can be saved. There is no more important operation than the removal of a gangrenous appendix intact. Of all life-saving operations, it is the safest. Patients seen for the first time on the third day of an attack or later may be divided into the following 3 groups: (1) those in whom the attack is subsiding, (2) those with evidence of localized peritonitis, and (3) those with clinical evidence

carcinoma, keloid, or lupus. The cut tissue is white and firm and the mucous membrane rugose and sometimes ulcerated. Histological examination reveals a dense infiltration of round cells mixed with fibroblasts and a few epithelioid cells and polymorphonuclear leucocytes. The infiltration is often densest in the submucosa. The picture is that of the combined effect of a tuberculous and simple inflammation and is very much like the picture of lymphosarcoma.

In cases with a history like that of common duodenal ulcer the acidity of the gastric juice is normal or only slightly increased and the temperature is usually normal. The hyperplastic type of intestinal tuberculosis produces a progressive obstruction with its characteristic symptoms.

Except in cases of advanced generalized tuberculous, radical excision or gastro-enterostomy depending upon the degree of involvement, is the treatment of choice.

The authors report a case of hyperplastic tuberculous of the duodenum with symptoms of obstruction in which an operation was performed for supposed carcinoma of the stomach.

ROY A. LOWENLAD, M.D.

Kantor J. L.: Roentgen Diagnosis of Diseases and Abnormalities of the Colon. *Radiology* 932, xix, 196.

The colon may be examined roentgenologically by observing the passage of an opaque meal through it or distending it with an opaque enema. These methods supplement each other and both are needed for a complete investigation. The former should be used first in most cases and is best suited for the study of colonic function and the identification of such special conditions as atony, spasticity, irritability and the various forms of constipation. Observations are made five, nine and twenty-four hours after the ingestion of a barium meal and there after at intervals of twenty-four hours until the colon and rectum are entirely free from the opaque material. Then, after the colon has been thoroughly cleaned by saline enemas an opaque enema is administered to obtain information relative to colonic form. Observations are made also immediately after the evacuation of this enema. In selected cases additional information may be obtained by injecting air into the colon after the opaque enema has been evacuated or by using the compression method of Berg with minimal amounts of opaque material. The author describes the various procedures used by him in detail.

The anatomical and roentgenological aspects of the normal colon are described at some length. Such organic diseases as obstruction, tumors, colitis gravis, tuberculous and other ulcerative processes, and appendicitis are discussed in detail both as to the best methods for obtaining desired information relative to them and the findings they present. Brief mention is made of such relatively rare findings as actinomycosis, fistula, non-specific granuloma,

morpheus hunger and foreign bodies. Of the functional disorders, constipation and irritable colon are given consideration. Anomalies of size, length, rotation, descent, and fixation, and diverticula are also described.

ADOLPH HARTMAN, M.D.

Hjeltnes G.: Clinicostatistical Contributions on the Question of Appendicitis (*Klinisk-statistiske Bidrag til Appendicitisfrage*). *Acta Soc. med. Fennicae Helsing.*, 1932, B xix, No. 2.

The author has made a clinicostatistical analysis of the cases of appendicitis treated in the First Surgical University Clinic and the Maria Hospital in Helsinki for in the two-year period from 1931 to 1932.

According to the form of the appendicitis the 5,187 cases may be divided into the following groups: acute uncomplicated cases, 3,351; peripendicular abscess, 580; diffuse peritonitis, 48; interval cases, 581; and so called chronic cases, 302. The findings of this study and the conclusions drawn from them are summarized briefly as follows:

Appendicitis occurs with about equal frequency in both sexes, but perforation is more common in males than in females.

The average age of the males whose cases are reviewed was twenty-seven and a half years, and the average age of the females, twenty-six and sixteenths years. About two-thirds of the patients were between the ages of sixteen and thirty-five years.

There is a definite increase in the incidence of the condition in the spring of the year.

In more than one-third of the acute uncomplicated cases operated upon within the first twenty-four hours there was no increase in the temperature at the time of the patient's admission to the hospital. Women appear to react with an increase in the temperature more rapidly than men. A great difference between the axillary and rectal temperature in the initial stage of acute appendicitis is by no means constant.

In acute uncomplicated appendicitis the prognosis does not depend upon whether operation is performed within or after the first forty-eight hours. An acute appendicitis in which there is no peripendicular abscess can always be operated upon, regardless of the length of time since the beginning of the attack. When the diagnosis of uncomplicated appendicitis can be made with certainty there is no increase of risk after the first forty-eight hours.

Abscess formation is not rare even in very early stages of the disease. Therefore the diagnosis of uncomplicated acute appendicitis must be made with great caution before the end of the first forty-eight hours and especially after that length of time.

In more than one-third of the cases of general peritonitis reviewed perforation occurred within the first forty-eight hours after the beginning of the attack.

In a study of the total number of cases treated surgically in the acute stage a rapid increase in the mortality with every day of delay was evident. The mortality rose from 0.85 per cent on the first day to 5.16 per cent on the fourth day.

liver. They believe that only in an emergency should a patient be operated upon without a preliminary determination of the function of the liver. They advise a functional test of the liver as a routine procedure in cases of disease of the biliary tract, hepatic cirrhosis, malignancy of the alimentary tract, and all marked gastro-intestinal disturbances which might require surgery. In cases with liver dysfunction, ether and chloroform anesthesia should be avoided and the patient should be given buffered dextrose by vein and a diet consisting only of milk and carbohydrates. When organic arsenicals are given liver function tests should be made to check the effect of these drugs. They are an aid in prognosis as they reveal the value of dietetic and other therapeutic measures. In pre-ascitic cases of hepatic cirrhosis they disclose the severity of the disease.

One of the most valuable tests of liver function is the icteric index. The Van den Bergh test has no decided advantages over it. A 5-mgm dose of bromsulphalein agreed with the icteric index most frequently. The galactose-tolerance test was found of value in certain cases of cardiac disturbances and abdominal malignancy. The authors believe that the urobilinogen test is of little value as an index of liver function.

Of the 118 cases studied with one or more tests, 31 came to operation. In all of the latter the correctness of the tests was proved. In 2 cases the results of the tests were confirmed by biopsy and autopsy.

ROBERT ZOLLINGER, M D

Curtis, A. H. Adhesions of the Anterior Surface of the Liver. *J Am M Ass*, 1932, xcix, 2010

During the last five years the author has noticed that patients with gonococcal tubal disease very often complain of pain in the region of the liver which resembles that of pleurisy. At operation in cases with such pain he has found, on the anterior surface of the liver, adhesions of the "violin-string" type which he believes were responsible for the pain. Adhesions of the same type may be present also after almost any peritoneal infection. They have been found in cases of chronic inflammation of the appendix, bilateral hydrosalpinx, adenocarcinoma of the uterus, uterine fibroids, cholelithiasis, and tuberculous salpingitis. However, they appear to be characteristically indicative of gonococcal infection.

Curtis therefore concludes that in cases with a history of pain in the right upper quadrant of the abdomen an examination should be made for co-existent pelvic disease.

ROX A. LUNDBLAD, M D

Vergoz and Hermenjat-Gerin. Rupture of Amœbic Abscesses of the Liver into the Serous Cavities—Pleura, Peritoneum, and Pericardium (De la rupture des abcès amibiens du foie dans les cavités sereuses—plèvre, péritoine, péricarde). *Rev de chir*, Par, 1932, li, 680

The difficulties of diagnosis of amœbic abscess of the liver are considerable because of the concealed position of the liver and the intimate relations of

that organ to the surrounding viscera. The abscess often evolves silently until it ruptures into a neighboring structure and causes acute symptoms. This article deals only with the complications produced by migration of the abscess into the peritoneal cavity, the pleural cavity, and the pericardium.

Rupture into the pleural cavity was first described in 1829 and 1836 by Duplay and Behier. At about the same time Balme-Dugarrey observed a rupture into the peritoneal cavity. In 1856 Gaillard reported a liver abscess complicated by pleurisy and pericarditis. Since then, numerous studies of these complications have been reported. They all show that extension to the pleura is most common and extension to the pericardium least common.

The abscess of the liver is usually single. It begins as a necrotic nodule which soon becomes an abscess limited by granulation tissue. With enlargement of the abscess there is a parallel development of the encysting membrane. If the surface of the liver is reached, Glisson's capsule thickens and becomes adherent to adjacent structures. If the abscess evolves rapidly, the adhesions may be inadequate and free rupture into the peritoneal cavity, the pleural cavity, or the pericardium is favored. If the pleural cavity is obliterated, free rupture may occur into a bronchus.

The frequency of migration into the thorax is explained by the fact that the abscess occurs most often on the convex and posterior portions of the right lobe of the liver. The authors' statistics based on eighty collected cases show that the abscess occurred in the right lobe in sixty-four cases, in the left lobe in fifteen cases and in the quadrate lobe in one case. In thirty-nine cases it migrated into the peritoneal cavity, in twenty-eight cases into the pleural cavity, and in thirteen cases into the pericardium. Of the invasions of the peritoneal cavity, twenty-three remained localized, resulting in seven subphrenic and sixteen subhepatic abscesses. In sixteen cases there was a generalized peritonitis.

Subphrenic abscesses may reach the size of an infant's head. Subhepatic abscesses are usually smaller and often multilocular. Extensions to distant regions of the abdomen may occur and, reaching the right iliac fossa, may simulate an appendiceal abscess. The hepatic abscess remains in communication with the secondary abscesses by an orifice of variable size, a mere fissure or an opening admitting a finger. Its contents are a chocolate-brown fluid in which purulent masses are suspended. At operation the decision between primary closure and drainage of the peritoneal focus depends upon whether bacteria are present in addition to the amœbæ.

The hepatic abscess is usually, but not always, solitary. It may completely excavate the right lobe, leaving only a thin shell of parenchyma. The walls of the abscess are irregular and friable.

In the authors' opinion the abscesses which some surgeons have believed to be primary in the peritoneal cavity are explained by the evacuation and healing of a lesion primary in the liver.

of general peritonitis. It is generally agreed that in cases in which the attack is subsiding operation should be postponed. In cases with general peritonitis, Rayner delays operation only sufficiently to improve the patient's condition. The treatment of cases with localized peritonitis with or without a palpable mass requires careful judgment. In from 50 to 60 per cent of such cases the condition will quiet down in from one to two weeks under proper medical management and an interval appendectomy may be performed safely a few months later. In the few cases in which it does not quiet down, it will form localized abscesses requiring incision and prolonged drainage. Rayner prefers to operate in these cases under spinal or nitrous oxide oxygen anesthesia instead of ether or chloroform anesthesia.

MORLEY FLETCHER quoted Sir James Berry as saying that he deprecated the present practice of operating immediately in all cases of appendicitis. While the statistics of the large London hospitals show a remarkable reduction in the mortality in acute appendicitis the Surgeon General's returns for the whole country show a decided increase in the mortality. Morley Fletcher is of the opinion that in appendicitis in children immediate operation is indicated as it is not uncommon to find the adjacent lymph glands hyperplastic and even caseous. It is his practice to remove the enlarged lymph nodes at the time he removes the appendix in order to protect the patient from subsequent tuberculous peritonitis. When the patient is first seen after the third or fourth day of the attack and is still in good condition the pulse is quiet and the temperature is falling, he prefers to delay operation. He emphasized the importance of maintaining asepsis and a absolute rest and avoiding the use of purgatives and enemata.

DAVIS-COLLIER said that there are few who do not regard it as advisable to operate within forty-eight hours after the diagnosis has been made. He is opposed to delaying operation in the middle period as he believes this would put the profession back twenty years to the period of general peritonitis, pyelophlebitis, and subphrenic abscess. He is of the opinion that the high mortality in appendicitis is often due to poor surgical technique and judgment. If the symptoms and signs do not clearly point to a diagnosis of appendicitis and if there is doubt as to whether or not peritonitis is of pelvic origin he believes it is safer to await developments than to operate at once.

FISHER stated that in the cases of children immediate operation is advisable. He emphasized the importance of ruling out pneumonia, acute nephritis, pyelonephritis, and cystitis.

MORLEY said that removal of the appendix during the first day of the attack is the ideal procedure and can in no way be classed as medianesic surgery. He emphasized the fact that during the early hours of an attack the only complaint is a diffuse colicky pain across the center of the abdomen. The local rigidity and the tenderness in the right iliac fossa often do not develop until several hours later.

Occasionally acute fulminating peritonitis occurs within twenty-four hours after the onset of the symptoms of a appendicitis. The most common cause of obstruction of the appendix is a fecal concretion. Of great importance in the course of the disease after perforation is the relative position of the appendix in the abdomen. Perforation of the appendix into the retrocaecal fossa or on the outer side of the caecum is more likely to give rise to an abscess which is localized than perforation occurring into the pelvis or near the terminal ileum. Under the latter conditions intestinal obstruction is more apt to complicate the picture. Morley believes that spinal anesthesia is superior to general anesthesia as it gives better muscular relaxation and enables the surgeon to operate with much less trauma and his less danger of causing diffusion of the septic material.

BROWN stated that under no circumstance should an abscess cavity in a child be manipulated. The surgeon should be content to place a drainage tube or better to wait until the end of the first week until immunity to the micro-organisms has developed.

CORT said that while it is usually safe to operate early in acute appendicitis, there are cases with early palpable abscess formation in which it is wiser to wait for immunity with walling off of the abscess. Delay is often advisable also in cases of general peritonitis.

LETT closed the discussion with the statement that in 1,000 cases of appendicitis treated in the London Hospital in the years from 1901 to 1904 the average operative mortality was 24 per cent. In 166 cases with general peritonitis it was no less than 76 per cent, and in 94 per cent of the cases the acute appendicitis was complicated by abscess or general peritonitis. In a similar series of 1,000 cases treated ten years later after the importance of early operation had become generally recognized, the incidence of a abscess or general peritonitis was only 45 per cent and the average mortality dropped from 24 to 4.1 per cent.

JOHN W. NICHOL, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Loewenthal, L.: Cases of Spontaneous Internal Biliary Fistula. (Fascic. on spontaneous internal Gallbladder) *A. J. reval.* 932 xix, 55

After reviewing forty previously published cases of internal biliary fistula which were diagnosed by X-ray examination, the author reports two such cases observed by himself. In one of the latter there was a fistula leading from the gall bladder to the colon. In the other a duodenal ulcer had perforated into the common duct.

Robertson, W. E., Swaine, W. A., and Korschmann, F. W.: The Functional Capacity of the Liver: Comparative Merits of the Five Most Popular Tests. *J. Am. M. Ass.* 932 xix, 897

The authors discuss the comparative merits of the 5 most popular tests of the functional capacity of the

Typical streptococci produced smooth, non-hæmolytic, colorless or green colonies on blood agar and were killed by exposure to the action of bile. Atypical streptococci formed rough, non-hæmolytic white colonies and were not killed by the action of bile.

The majority of staphylococci were of the albus variety and were classified as contaminations. The bacillus coli was assumed to be a secondary invader and without etiological importance.

There was no significant difference in the results of cultures from the whole thickness of the gall-bladder wall and those of cultures of the submucous layer.

An attempt was made to determine whether chronic cholecystitis could be produced in rabbits by the injection of organisms isolated from human gall bladders. The results were as follows:

Injection of typical streptococci. Cystic duct not ligated

Site of injection	Experiments	Injections	Cholecystitis produced in
Gall-bladder wall	7	1	7
Gall-bladder lumen	9	1	3
Right lobe of liver	9	1	1
Wall of duodenum	9	1	0
Wall of appendix	6	1	0
Portal vein	8	1	2
Ear vein	19	1-3	0

Injection of typical streptococci after ligation of cystic duct

Site of injection	Experiments	Injections	Cholecystitis produced in
Gall bladder wall	2	1	2
Gall bladder lumen	2	1	1
Right lobe of liver	3	1	3
Wall of duodenum	1	1	1
Wall of appendix	1	1	0
Portal vein	2	1	2
Ear vein	3	2	1

Injections of atypical streptococci into the gall-bladder wall, the gall-bladder lumen, or the portal vein failed to produce signs of cholecystitis, while injections of bacillus coli into the wall of the gall bladder led to the development of an acute gangrenous cholecystitis.

Simple ligation of the cystic duct caused atrophy of the gall-bladder mucosa and slight fibrous thickening of the gall-bladder wall. In 1 of 8 such experiments calculi were found in the fibrosed gall bladder. In another, the gall bladder showed a true chronic cholecystitis. Ligation of both cystic duct and blood vessels produced necrosis of the gall-bladder wall accompanied by a polymorphonuclear infiltration of the necrosing tissues—the picture of acute gangrenous cholecystitis.

Chronic cholecystitis was found as a naturally occurring disease in 2 of 200 untreated rabbits.

NORMAN G. PARFY, M.D.

Ballice, G. Recent Researches on the Regeneration of the Gall Bladder and a Vindication of Some Personal Concepts Regarding the Surgical Treatment of Cholelithiasis (Ulenon

ricerche sulla rigenerazione della vescichette biliare e rivendicazione di alcuni concetti personali sulla cura chirurgica della litiasi colecistica) *Ann. Ital. di chir.*, 1932, XI, 1004.

In experiments on dogs the author found that following removal of the gall bladder with preservation of a portion of the cystic duct, a rudimentary new gall bladder frequently developed from the cystic duct pedicle, and following the removal of the gall bladder and the entire cystic duct the scar on the common duct became slightly dilated.

The opinions of various surgeons regarding the treatment of cholelithiasis are reviewed. Ballice believes the gall bladder should be removed only when it is so severely damaged that complications would develop if it were not removed. When it is not severely diseased it should be drained as under such circumstances drainage may be followed by a return to more or less normal function.

PETER A. ROST, M.D.

McIndoe, A. H. Delayed Hæmorrhage Following Traumatic Rupture of the Spleen. *Brit. J. Surg.*, 1932, XX, 249.

The author cites a series of cases of late hæmorrhage following what were apparently insignificant injuries. He emphasizes that when an injury is only slight or moderately severe, symptoms are usually entirely absent so that within a few days all recollection of the accident will pass from the patient's mind. However, in almost all of the cases reviewed which were seen early after a trivial accident there was pain in the region of the spleen which varied from mere discomfort to severe stabbing paroxysms of great intensity. In lesions in the vicinity of the diaphragm the significance of this pain as indicative of subcapsular rupture of the spleen is of great importance.

Following an abdominal contusion the presence of rigidity not limited to the injured point is a clear indication for immediate laparotomy.

In the cases reviewed, the duration of the disability occasioned by the initial injury depended more on the associated injury than the splenic trauma and the association of the subcapsular or perisplenic bleeding. Many of the patients returned to work after one or more days. It is significant that most of the patients were not entirely free from symptoms when they returned to work.

In contradistinction to the so-called spontaneous rupture of the spleen, which occurs usually in the pathological organ, this accident occurred in the cases reported almost exclusively in the normal spleen. Of the forty-six collected cases, malaria was present in only two.

Primary injuries of the spleen are classified into the following groups:

1. Minor superficial capsular rupture or slight splenic contusion producing parenchymal ecchymosis.

2. Intrasplenic hæmatoma and subcapsular hæmorrhage without capsular rupture.

Following free rupture of an abscess into the peritoneal cavity the symptoms are those of peritonitis such as results from the perforation of any viscus, a gastric ulcer or a pyosalpinx. Unless something is known of the patient's previous history an etiological diagnosis is impossible. However the point of maximum tenderness is always found over the liver. Abscesses resulting from localized ruptures also lack distinctive features. Subphrenic extensions produce the usual cough and pain in the base of the thorax with radiations to the shoulder and the base of the neck.

Migration to the thorax is usually preceded by an obliterative pleurisy. When once the diaphragm has been penetrated, further extension occurs into the lung. The usual termination is rupture into the primary bronchus. The abdominothoracic communication may be a small tear or a vast defect involving the entire right half of the diaphragm. When the suppuration extends rapidly, pleural adhesions may be absent and the hepatic abscess is evacuated into the pleural cavity. When there is secondary infection, pyopneumothorax results. Less frequently the empyema is limited to the costodiaphragmatic angle. Of the cases reviewed by the authors, the suppuration was encysted in seven and generalized in twenty-one. The lung may be collapsed, consolidated, or completely destroyed.

During the initial stages of the process the symptoms are those of an intense diaphragmatic pleurisy. Symptoms of empyema then gradually develop. However if the pleura is suddenly flooded, death may occur within a few hours. Empyema occurs in this is not uncommon. The differential diagnosis is often difficult. Puncture is frequently inconclusive because the pus is not invariably of the amebic type.

Invasion of the pericardium is quite rare, and is becoming even less frequent with earlier recognition and treatment of amebic hepatitis. In 1895 Bertrand and Fontan were able to collect only thirteen cases. There are two explanations for the rarity of the condition: (1) the rarity of abscess of the left lobe of the liver and (2) the fact that the pericardium is situated above the resistant sponenrotic portion of the diaphragm. The pericardium is usually involved slowly and the initial stage is a serous effusion with all of the usual signs and symptoms. Following sudden inundation, death occurs within a few minutes or a few hours.

The treatment of amebic suppuration has been completely changed by the introduction of emetin. The function of surgery is now reduced to evacuation and drainage. Secondary infection is uncommon, and primary closure is possible in the vast majority of cases. At every operation the pus should be examined microscopically. Operation should be so planned that the hepatic collection can be evacuated with the secondary abscess. When there is a pyothorax the opening in the diaphragm should be identified and enlarged and the liver evacuated through this route. When possible, the diaphragmatic breach should then be sutured. In the

presence of secondary infection the abscess should be marsupialized by suturing the borders of the diaphragmatic wound to the thoracic incision. Drainage of the pleura should be assured by a rib resection immediately above the intercostal incision.

To date no intervention has been done on the pericardium, operation always being limited to drainage of the liver. The uniformly poor results have led to the conclusion that it would be advisable to perform a pericardotomy which would permit evacuation of the hepatic abscess at the same time. The standard operations for exploration of the pericardium are unsuitable, being too high and not giving access to the liver. Larray's route is recommended. By an incision upward along the left costal margin to the xiphoid and vertically to detach the fifth and sixth costal cartilages, the pericardium and abdomen are opened at the same time, the latter over the left lobe of the liver. The cartilages are reflected by sectioning the sternum in the midline. After evacuation of the pericardium and hepatic abscess, the former is closed and the latter near supralized provided there is no secondary infection. If secondary infection is present both pericardium and liver are drained.

The article is concluded with a review of eighty cases collected from the literature, some of which are recorded in detail and others merely listed.

There are five illustrations showing the pathological anatomy and the operative technique.

ALBERT T. DE GROOT, M.D.

Magner, W., and Hutchinson, J. M.: Cholecystitis. *Canadian M. Ass. J.* 93, xxvii, 469.

The findings of bacteriological examination of gall bladders removed at operation were as follows:

All gall bladders 200 specimens, positive cultures in 93 per cent

Bacteria	Per cent
Typical streptococci	16
Atypical streptococci	37
Bacillus coli	38
Staphylococci	37
Other bacteria	34

Cholecystitis 67 specimens, positive cultures in 93 per cent

Bacteria	Per cent
Typical streptococci	9
Atypical streptococci	37
Bacillus coli	38
Staphylococci	37
Other bacteria	37

Fibrosis of the gall bladder 23 specimens, positive cultures in 90 per cent

Bacteria	Per cent
Atypical streptococci	52
Typical streptococci	22
Bacillus coli	37
Staphylococci	30
Other bacteria	5

In all cases cultures were made from the gall-bladder wall including the mucous membrane.

Typical streptococci produced smooth, non-hemolytic, colorless or green colonies on blood agar and were killed by exposure to the action of bile. Atypical streptococci formed rough, non-hemolytic white colonies and were not killed by the action of bile.

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Injection of typical streptococci after ligation of cystic duct

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Gall bladder wall	2	1	2
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In the cases reviewed, the duration of the disability occasioned by the initial injury depended more on the associated injury than the splenic trauma and the association of the subcapsular or perisplenic bleeding. Many of the patients returned to work after one or more days. It is significant that most of the patients were not entirely free from symptoms when they returned to work.

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Primary injuries of the spleen are classified into the following groups:

1. Minor superficial capsular rupture or slight splenic contusion producing parenchymal ecchymosis.

2. Intrasplicenic hematoma and subcapsular hemorrhage without capsular rupture.

3. Capsular and parenchymal rupture with perisplenic hematoma.

In the cases reviewed the convex surface and the posterior border of the spleen were most commonly involved. The hilum was seldom the site of the secondary rupture. When injury occurs at this site it involves important vessels which bleed furiously and there is little tendency for the hemorrhage to cease. In many of the cases reviewed the lesions were multiple, both surfaces of the spleen being affected. The frequency with which a tongue of omentum insinuated itself between the margins of the rupture or applied itself over the wound was striking. The omentum was usually found to be blackened, swollen, and infiltrated with old blood. The union was at first rather fragile, but later was firmer and less easily separated.

Immediate and temporary hemostasis is brought about more commonly by omental plugging combined with the tamponing effect of the subjacent clots. In the cases reviewed the defensive reaction of the peritoneum caused coalescence of the various organs, which appeared more or less infiltrated with blood, and produced an enclosure preventing diffusion of the blood and peritoneal flooding and aided materially in limiting further bleeding. However no true cyst was formed, and except in one case no trace of a capsule could be discovered.

At operation performed for secondary hemorrhage the spleen is often found to be in multiple frag-

ments. This condition is explained by violent force of the secondary hemorrhage.

ROSCOE R. GRAM, M.D.

Ellison, E. L., and Ferguson, L. K.: *Splenectomy in Purpura Hemorrhagica. A Surg* 1934, xvi, 801.

The authors review the literature on splenectomy in purpura hemorrhagica and to the 305 cases collected by others they add 5 cases of their own.

Purpura hemorrhagica is a disease causing a reduction in the blood platelets and a disturbance of the entire reticulo-endothelial system. It has not yet been proved that the spleen is the organ at fault. The diagnosis must be established definitely before splenectomy is considered. The therapeutic indications are control of the hemorrhage and removal of the cause. In the acute and recurring cases splenectomy appears to be the most effective means of controlling the hemorrhage. Early operation and adequate pre-operative preparation by transfusion are imperative. The best prophylaxis against recurrence is the removal of foci of infection.

In the 313 cases reviewed the operative mortality was 13 per cent, but in 213 cases treated in the last four years it was 7.08 per cent. In 35 cases of acute purpura it was 34.3 per cent, but in the last 22 cases of this type it was 13.6 per cent. In 160 cases of chronic purpura it was 7 per cent.

J. FRANK DOUGLASS, M.D.

GYNECOLOGY

UTERUS

Seisser, F. Wounds of the Uterus and Their Treatment (Ueber Uteruserletzungen und ihre operative Behandlung) *Ztschr f Geburtsh u Gynaek*, 1932, CIII, 130

The author reports on thirty-two cases of severe perforation of the uterus seen during the past ten years. Nine were cases of rupture of the uterus during labor, twenty-one, cases of perforation from abortion, and two, cases of perforation due to gynecological procedures. Of the nine uterine ruptures, only one was spontaneous, four were incomplete, and five were complete. All of the women with uterine rupture had fever before the operation. Five, in whom the rupture was recognized immediately, were saved. The four others, who came to operation from four and one-half hours to eighty-five hours after the rupture, died from hemorrhage or peritonitis. Of the twenty-three patients with perforation not due to labor, fourteen were cured. In the cases of thirteen, the perforation was recognized and the patient sent to the clinic immediately. The deaths occurred in the cases in which the woman came to the clinic after several days (up to nine days) after the perforation had occurred. The perforating agents included forceps, the curette, sounds, catheters and the finger.

The author believes that radical operation is indicated. He considers freshening and suturing of the perforation with preservation of the uterus too dangerous as all cases of abortion occurring outside of the hospital must be considered infected. To prevent perforation of the uterus it is most important to have the abortion treated by a specialist. Outside of the hospital febrile abortion should always be treated conservatively. If operative intervention is necessary the patient should be sent to the hospital. A prerequisite for instrumental intervention is sufficient dilatation of the cervix. During the curettage, oxytocic drugs should be administered. Perforation cannot always be avoided. When it is recognized or even suspected the patient should be taken to the hospital immediately.

KESSLER (G)

Frank, R. T. Fibromyosis, An Unclassified Plexiform Endolymphatic Proliferation of the Uterus. *Am J Cancer*, 1932, xvi, 1326

The author's findings in three cases of fibromyosis and conclusions drawn from them are summarized as follows:

1. Diffuse endolymphatic fibromyosis of the uterus, although rare, appears to be a distinct entity.

2. The onset of the condition is characterized by marked and repeated uterine hemorrhages.

3. A slow uniform and symmetrical enlargement of the uterus occurs. In the cases reviewed, the size of the uterus at the time of operation varied from a size somewhat greater than normal to that of a grapefruit.

4. On the basis of the clinical findings a diagnosis of myoma or adenomyoma is warranted.

5. At operation, the findings justify a similar diagnosis. Consequently, supravaginal hysterectomy should be performed.

6. From the gross specimen, the surgeon and pathologist makes the diagnosis of diffuse adenomyosis or functional fibrosis. No myomata are present, the uterine walls resembling those seen in hypertrophy of the uterus from continued excessive functional stimulation.

7. Microscopic study shows diffuse endolymphatic distribution with no evidence of the primary site. In the cases studied, perilymphatic and extralymphatic extension took place secondarily and in only a few areas. In only one section were tumor cells found in a vein. The invasion or growth in the lymph spaces is unaccompanied by destruction of the lymphatic endothelium or lymphatic wall. All three of the growths studied showed a plexiform mode of extension, a cell type resembling that of the stroma of the endometrium, and absence of polymorphism.

8. The endometrium is normal throughout.

9. This type of neoplasm seems to grow slowly and to exhibit only a moderate degree of clinical malignancy. In the first case studied, seventeen years elapsed before death occurred.

10. No final conclusion as to radiosensitivity can be offered as yet. GOODRICH C. SCHAUFFLER, M.D.

Fusco, G. Experimental Cancer of the Uterus and the Vagina (Cancro sperimentale dell'utero e della vagina) *Arch di ostet e ginec*, 1932, XXXIX, 315

The problem of producing cancer in experimental animals is not a new one. However, many technical difficulties are encountered when the attempt is made to produce cancer of the uterus. These are due largely to the mechanical difficulty of repeatedly entering such a small viscus as the uterus of experimental animals.

The author advocates Spirito's technique of producing a uterine fistula by transabdominal section of the vagina with suture of the proximal cut margin of the vagina in the abdominal wall to form an abdominal vagino-cervico-uterine fistula. The repeated introduction of tar into the cervix results in the formation of a black crusted mass which tends to occlude the uterine opening. Four rabbits were injected every seven or eight days. All became emaciated and died within two months. On histological examination, necrosis of the uterine mucosa

was found. This varied in depth. In some places it extended into the adjacent musculature and in others it was quite superficial.

In another experiment on rabbits the injections were made into only one horn, less often, and with less tar and the animals were killed after four months. In some of the animals it was almost impossible to distinguish the injected horn from the normal horn. In most places the uterine mucosa was normal, but in a few areas it presented a pseudo-stratified epithelium comparable to vaginal mucosa. In no place did this epithelium invade the musculature. The cervical and vaginal mucosa was thickened and keratinized. Not a single instance of cancer formation was found.

The author next reviews the work of others who have attacked the problem of producing experimental cancer in the uterus.

Teuschlander was the first to produce an invasive epithelial tumor in a uterine horn, but most of his animals showed no changes in the uterine mucosa or only a metaplasia of epithelial cells.

Yamaguchi and Ohno found three carcinomata of the oviduct in a series of forty-one chickens injected with scarlet red.

Cloft conducted the following experiments:

1. Tar was applied weekly to the cervix. After one hundred and sixteen days there was a typical hyperplasia of the vaginal and cervical mucosa.

2. Tar was applied weekly to the cervix of castrated animals. Examination after twenty-four days revealed evidence of metaplasia and atypical cell formation in the vaginal mucosa and small foci in the cervical epithelium which resembled neoplasms.

3. Tar was applied weekly to the cervix after removal of the uterine horns. This procedure produced hyperplasia and metaplasia of epithelial cells in the vaginal and cervical epithelium.

4. Tar was applied to the oodovagina for three months, bilateral oophorectomy was then performed, and thereafter the uterus was injected with tar every week. Following this procedure, examination revealed a cancer of the cervix with epithelial pearls and structures resembling adenocarcinoma.

5. Tar was applied to the endovagina for a period of three months, both uterine horns were then removed and the uterus was thereafter injected with tar every week. This procedure produced hyperplasia and metaplasia of the vaginal and cervical epithelium.

Cloft concluded that abolition of ovarian function is an important factor in the production of experimental cancer of the uterus by tar injections.

Bedile and Mazzaro produced cancer in uterine horns filled with tar and ligated above and below the site of the injection. Casabona confirmed this observation.

Fusco used the abdominal vagina-cervico-uterine fistula technique of Spirito on normal and castrated white rats. Such a thick black crust formed at the external os after several injections of tar that it was

often impossible to continue with the injections. No cancer of the cervix, vagina or uterus developed in the animals, but there were changes in the mucosa of the uterus and cervix similar to those previously described by others. In another series of experiments, in which tar was injected into the vagina every third or fourth day over a period of months, a typical cancer of the vagina occurred in one animal. While this vaginal cancer occurred in an animal which had been castrated, the author was unable to confirm Cloft's observations on the activating influence of bilateral oophorectomy in the development of experimental cancer of the uterus.

GEORGE C. FIVOLA, M.D.

Cotta, G.: Resection of the Pelvic Sympathetics in the Pelvic Neuralgias Associated with Cancer of the Cervix (*La Résection du sympathique pelvien dans les névralgies pelviennes liées au cancer du col*). *Gynécologie*, 1931, April, 377.

In the treatment of pelvic pain (neuralgia) complicating cancer of the cervix and due either to extension of the neoplasm or intensive radiation therapy, relief should follow intervention directed to the pelvic sympathetics.

At a meeting of the Surgical Society of Lyons in April, 1931, Tisserand reported relief of pain from cancer of the cervix following bilateral hypogastric periaortic sympathectomy. Complete relief obtained for ten months even though the disease advanced, hemorrhages occurred, and cachexia appeared.

At the same session of the Surgical Society of Lyons, Leriche reported observations on a case of cancer of the cervix and a case of cancer of the prostate. He had previously attempted to relieve cancer pain by cutting posterior roots, by lateral chordotomy and by transverse myelotomy but the results were unsatisfactory. Consequently in these two cases he completely desanded the terminal abdominal aorta, the upper portion of the iliac arteries, and the hypogastric arteries in such fashion as to obtain an extensive sympathectomy.

Among the first to still use resection of the presacral nerve successfully for the relief of the pain of inoperable cancer were Féry and Desmurets. More or less similar results were obtained by Bernard, Théodoresco, Prodonci, Walther, Combes, Orjol, Leriche and others.

Jann, after having used hypogastric periaortic sympathectomy and resection of the presacral nerve, performed a much more extensive and dangerous operation by removing the lumbo-aortic and hypogastric plexuses in one piece. Below after having mobilized the rectum he continued the resection of the hypogastric plexus up to the hypogastric ganglia. Above he started downward from the third portion of the duodenum so as to include the fibers arising from the renal plexus which go to form the tero-ovarian nerve. Finally he completed the resection of the ganglia of the lumbar and sacral sympathetic chains.

The author's experience with such measures for the relief of pain in five cases of extensive cancer of the cervix may be summarized briefly as follows

Case 1 Resection of 5 or 6 cm of the presacral nerve was followed by a poor result, probably because the resection was insufficient and incomplete

Case 2 Resection of 6 cm of the presacral nerve was followed by great relief until the patient's death five months later, even though the nerve was found buried in cancerous extension

Case 3 Resection of from 5 to 6 cm of the presacral nerve was followed by relief even though the nerve was infiltrated by the cancer Later, the administration of morphine became necessary because of bladder and anal pain

Case 4 Resection of 6 cm of the presacral nerve was followed by complete relief for five months Morphine was necessary for only two weeks before death

Case 5 This was a case of Latzko's which was operated upon by the author Two centimeters of the presacral nerve were removed Inflammation was present about, but not in, the nerve fibers Six months later there was complete relief from the pain even though the cancer had advanced sufficiently to cause rectovaginal and vesicovaginal fistulae

Cotte concludes that hypogastric periauterial sympathectomy and resection of the presacral nerve are efficacious in relieving the pelvic neuralgic sufferings of those afflicted with advanced cancer of the cervix The relief is not always complete up to the time of death, morphine is usually necessary during the final weeks of the disease

Intervention on the pelvic sympathetics is justified only in cases in which the pain is dependent upon the hypogastric plexus or due to invasion of the parametrium and regional cellular tissues If there is obturator neuralgia, sciatica, or painful paraplegia, the surgical intervention on the sympathetics must be sufficiently extensive to include communicating branches

It might be expedient to perform a prophylactic resection of several centimeters of the presacral nerve at the time of operation for the removal of the cancerous uterus Férey has already adopted this suggestion Even though it was necessary later to perform a vaginal operation for bladder involvement, this could be done without causing pain

GEORGE C FINOLA, M D

ADNEXAL AND PERIUTERINE CONDITIONS

Jayle, F Hypophysis and Ovary General Survey, Anatomy, and Clinical Considerations (*Hypophyse et ovaire. Considérations générales, anatomie et données cliniques*) *Reç franç de gynec et d'obst*, 1932, xxvii, 637

The author first reviews the history of the theory of endocrine secretion He states that more than forty years ago, in comparing the results of vaginal and abdominal hysterectomies, he became convinced that the disturbances following castration are due to

the suppression of ovarian activity In 1805 he suggested ovarian opotherapy, and in 1897, the implantation of ovarian grafts for the relief of such disturbances

The trophic influence of the ovary was found to affect not only the uterus, but also the entire external and internal genital apparatus The inconstancy of the effect of oöphorectomy suggested that perhaps other glands might have a similar or substituting action This theory led to the discovery that thyroid therapy is often beneficial in cases of ovarian insufficiency or castration The effect of the hypophysis on the genital tract was demonstrated first by Heape, in 1905 Heape's "genetic ferment" was probably the secretion of the hypophysis The experimental study of hypophyseal therapy in ovarian conditions was not begun until 1913 In 1914, Jayle came to the conclusion that ovarian secretion is influenced by the hypophysis He reviews the various effects on ovarian activity produced by thyroidectomy, parathyroidectomy, and hypophysectomy During pregnancy, hypertrophy of the thyroid, parathyroids, and hypophysis is noted In obesity, either the hypophysis or the ovaries or both may be affected The endocrine glands are intimately related not only to each other, but also to the nervous system The hormones act upon the sympathetic nervous system The nerve centers of the tuber cinereum regulate the secretion of the hypophysis, and the hypophyseal secretion is carried to these centers Thus a sort of cycle is established

The gross anatomy of the human hypophysis is well known only to a few specialists The hypophysis lies in the sella turcica and at the level of the tuber cinereum is attached to the floor of the third ventricle by a small pedicle known as the "hypophyseal stalk." As the hypophyseal stalk leaves the tuber cinereum at the level of the infundibulum, it passes obliquely forward and downward to penetrate the dura mater in the posterior portion of the sella turcica and then lose itself in the hypophysis

The hypophysis is both intradural and subdural In fact, the dura mater encloses it like an envelope It is enclosed also in a sort of capsule and by a network of veins in the dura mater Tiny venules from the hypophyseal substance open into the coronary sinuses The parts of the floor of the third ventricle to which the stalk of the hypophysis is attached are supplied by the median central arteries, branches of the posterior communicans The vessels of the dura mater also carry arterial blood

In man, the hypophysis has a globular shape with a greater transverse than vertical diameter In both man and animals its weight is very small compared to the total weight of the body, but it varies according to the species, race, and state of health The comparative weights in man and animals are discussed in detail In an adult man weighing 70 kgm the hypophysis weighs about 0.50 ggm

In man, the anterior lobe of the hypophysis is reddish, and the posterior lobe is yellowish The posterior lobe is much smaller than the anterior lobe.

The posterior lobe constitutes 18 per cent of the gland, the anterior lobe, 72 per cent, the pars intermedia, 2 per cent, and the capsule, 8 per cent. Conclusions as to the size of the hypophysis may be drawn from roentgenograms of the sella turcica. The measurements of the sella turcica made by Hots in the cases of 135 persons up to sixteen years of age are shown in tables. It remains to be ascertained whether the hypertrophy of the gland which occurs during pregnancy enlarges the sella turcica.

The pars intermedia is a cellular area between the anterior and posterior lobes.

In the anterior lobe three types of cells are found: chromophobe cells, which are small chromophilic basophilic cytoplasmic, and siderophilic cells and large chromophilic and eosinophilic cells. It has been suggested that these cells represent merely different stages of development. During pregnancy there is a great increase in the acidophilic cells, to which the name "pregnancy cells" has been given. In primiparae these cells appear in the fifth month of pregnancy and in multiparae in the second month. The connective tissue, which is not abundant, increases with age. In old persons, fat cells are found.

The posterior or nervous lobe of the hypophysis is composed of neuroglial cells and fibers and of cells containing dark pigments.

The pars intermedia contains secretory cells similar to those in the anterior lobe, and a large number of vesicles filled with colloid.

The posterior lobe of the hypophysis is of cerebral origin, and the glandular or anterior lobe of pharyngeal origin. The latter is an invagination of the pouch of Rathke.

The author reviews the literature on the clinical manifestations of the relationship between the hypophysis and ovaries. This relationship was first noted in cases of hypophyseal infantilism. In adults, lesions of the hypophysis lead to ovarian insufficiency. The severe headaches which sometimes follow oophorectomy are relieved by the administration of folliculin. The close interrelationship of the hypophysis and ovary is evident also from the fact that a diagnosis of pregnancy may be made by injecting the urine of the pregnant woman into infantile mice and noting the effect of its content of hypophyseal hormone on the ovaries of the mice.

ENTER S. MOORE

Hallén, L.: *Hypophysis and Ovary. Their Physiological Relations According to Experimental Findings (Hypophyse et ovaires. Leurs relations physiologiques d'après des données expérimentales)*. *Rev. franç. de gynéc. et d'obst.* 313, 1937, 674.

The functional relations between the hypophysis and the sex glands have been recognized by experimenters from the effects of removal of the hypophysis in animals and by physicians since Marie demonstrated the changes in the sex glands which are present in acromegaly.

Removal of the entire hypophysis or of only its anterior lobe is not incompatible with life as was

formerly believed because of the imperfect technique used in the extirpation. However it causes considerable and indefinitely persistent disturbances. If the animal is young, the general development of the body continues only very imperfectly after the operation. Among the multiple anatomical and physiological deficiencies affecting especially the glands of internal secretion, those which affect the genital organs and the sex characteristics are particularly striking in the male as well as the female. In the female, puberty does not occur. The ovaries remain small, and there is no maturation of follicles. The uterus, the rest of the genital tract, and the breasts are rudimentary. The animal deprived of its hypophysis before puberty is not only a dwarf but also sexually infantile. In the adult animal, extirpation of the hypophysis results in slowing of the metabolism with atrophy of the endocrine glands, especially the sex glands. In the adult female the estrous cycle is abolished completely and permanently. There is no sexual instinct and no attraction for the male. All of the genital organs regress. The ovaries decrease in size and possess no specific activity. The uterus atrophies.

It has been definitely proved that in young animals all of the disturbances resulting from removal of the anterior lobe of the hypophysis may be prevented, and in adult animals they may be corrected to a noteworthy degree, by the administration of substance of the anterior lobe of the hypophysis.

Substance of the anterior lobe of the hypophysis may be administered by the implantation of tissue or the injection of an extract. Implantation is very similar to the injection of an extract as the implanted tissue does not become engrafted and the active principles which it contains act by diffusion.

Hitherto, experiments have been performed chiefly on rats and mice. In the infantile female mouse the implantation of tissue of the anterior lobe of the hypophysis causes premature rat with typical vaginal changes and, in the ovary follicular maturation, ovulation and the formation of corpus luteum. While it seldom produces an entirely normal cycle, it usually causes at least the two fundamental cytological processes, intrafollicular proliferation and luteinization. It produces the premature cyclic reaction by way of the ovary. In oophorectomized animals it has no effect on the other genital organs.

In female animals, rat with normal periodicity may occur for some time after the implantation of tissue of the anterior lobe of the hypophysis. The same effect is produced by the injection of folliculin, the ovarian hormone.

When a female animal is subjected to prolonged treatment with substance of the anterior lobe of the hypophysis, the luteinizing action tends to predominate over the follicle-maturing action and sterility ensues, at least for a time. Prolonged luteinization ends in degeneration.

It appears to be established that the luteinizing effect and the follicle-maturing effect are due to separate hormones. Androsterone isolated from the

urine of pregnant women a substance which had only a luteinizing action, and from the anterior lobe of the hypophysis a substance which had only a follicle-maturing action. Zondek found that in certain pathological urines the first of these effects is much greater than the second, and the second may be negligible even when relatively large doses are used.

Besides the sex hormones described, which subordinate the ovary to the anterior lobe of the hypophysis, the latter organ seems to contain a substance which is apparently identical with folliculin. Like folliculin, it will produce oestrus in castrated females as well as normal females, whereas the hormones of the anterior lobe of the hypophysis produce oestrus only through the secretion of folliculin which they cause in the ovaries.

These various secretions of the hypophysis seem independent of each other. The sex hormones of the anterior lobe have an elective action on the sex glands which is similar in males and females. The gonad secretions are unisexual both in origin and action. The secretion of the posterior lobe of the hypophysis stimulates the uterine muscle by direct action rather than through the ovary.

During pregnancy, the placenta contains a substance which is physiologically similar to the sex hormone of the hypophysis. It is not known definitely whether this is formed in the placenta or is carried to it from some other gland.

The dosage of the hormones of the anterior lobe of the hypophysis is based on physiological units sufficient to produce definite reactions in experimental animals. The rat and mouse units are not similar.

While it is evident that the anterior lobe of the hypophysis governs the function of the ovary, it is evident also that the variations in the function of the ovary have an influence on the anterior lobe of the hypophysis. Following removal of the ovaries the anterior lobe of the hypophysis undergoes a very pronounced hypertrophy and shows very characteristic histological changes. The number of eosinophile cells increases, the number of chromophobe cells decreases, and large cells called "castration cells" appear. Moreover, the content of sex hormones in the tissue increases considerably. The same phenomena are noted following removal of the testicles in the male. The histological changes caused in the hypophysis by castration are corrected by the injection of folliculin.

During pregnancy the anterior lobe of the hypophysis undergoes considerable hypertrophy and shows large cells called "gestation cells." Similar changes are brought about by the ingestion or the implantation of placental tissue.

The secretion of the anterior lobe of the hypophysis constitutes the primary motor of the sexual cycle. Its two hormones, the follicle-maturing hormone and the luteinizing hormone, regulate respectively the production in the ovary of folliculin and progesterin. For the normal evolution of the sexual cycle these four hormones must function with a peculiar regu-

larity. Folliculin and progesterin are reciprocally antagonistic in certain respects. The injection of folliculin or removal of the corpus luteum prevents nidation or causes abortion. The corpus luteum opposes the action of folliculin. It inhibits the production of this hormone by preventing maturation of the follicle. It has a sterilizing and anti-oestrus action. Accordingly, a normal sexual cycle requires a nice equilibrium between folliculin and progesterin. Without doubt, the regulatory power is located in the ovary.

The hypophysis probably adapts itself to the physiological needs of the ovary. It is believed by some that when the quantity of folliculin in the blood reaches a certain level it inhibits the formation of the follicle-maturing hormone of the hypophysis which stimulates the secretion of folliculin in the ovaries. According to this theory, folliculin is self regulating.

The functional relationships between the hypophysis and ovaries and between the ovaries and the rest of the female genital tract seem to be exclusively of an endocrine nature. There is nothing to indicate a reflex nervous mechanism.

It has been suggested that ovulation is produced by a reflex released by stimulation of the genitals. This theory has been rejected because ovulation occurs in recently grafted ovarian tissue without any nervous connection with the genitals. It must be concluded that coitus acts by way of the blood stream. In the rabbit, ovulation may be produced, even without coitus, by the intravenous injection of the urine of a pregnant woman, which, as is well known, is rich in the hormones of the anterior lobe of the hypophysis. The urine of a non-pregnant woman does not have this effect. Removal of the hypophysis within an hour after coitus will prevent ovulation.

The hypophysis and the ovaries may influence each other also indirectly by their effect on other organs. The hypophysis secretes a hormone which stimulates thyroid secretion and the ovaries are sensitive to the latter. There seems to be a reciprocal relation between the quantity of thyrostimulin and the amount of folliculin present in the blood.

The article is concluded by a brief discussion of the biological diagnosis of pregnancy by demonstration of the hormone of the anterior lobe of the hypophysis in the urine.

EDITH S. MOORE

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In the last twenty-two years five cases of papillary ovarian tumor with apparent regression of the unremovable peritoneal implantations have been observed at the Roosevelt Hospital, New York. In four of them the regression was assumed from the many years of health which followed the operation, but in one of them partial disappearance of the implant was observed at a second operation. The au-

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In the last twenty-two years five cases of papillary ovarian tumor with apparent regression of the unremovable peritoneal implantations have been observed at the Roosevelt Hospital, New York. In four of them the regression was assumed from the many years of health which followed the operation, but in one of them partial disappearance of the implant was observed at a second operation. The au-

thors review thirty-one similar cases collected from the literature.

Pelvic endometriosis and pseudomyxoma may also undergo regression. The authors discuss the rôle of suppression of ovarian function as a cause of the regression of these tumors and of implantations of cystadenoma. This seems to be a factor in some cases, but not in all. Attention is called to the analogy between the behavior of these transplants and tuberculous peritonitis. It is suggested that the inflammatory reaction following laparotomy causes a stimulation of connective tissue activity which destroys the implant. Theoretically it is possible that ascitic fluid itself contains gross stimulating substances, possibly hormones, the removal of which permits disappearance of the grafts. In the authors' opinion the most plausible explanation of the regression of cystadenomatous implants is that the regression is a continuous process taking place with equal speed before the operation and that, by removing the tumor or the ascitic fluid, laparotomy eliminates the source or the means of transportation of the necessary supply of new implants.

The authors review nine cases in which two operations have been performed and the second intervention showed partial or complete disappearance of the growth observed at the first exploration.

In another group of cases spontaneous regression has been nearly as well proved by the long period of freedom from symptoms since the operation.

In a fourth group of fourteen somewhat similar cases regression appears probable, but the short period of observation does not definitely substantiate this conclusion.

The distinguishing clinical features of these cases of benign implants are the gradual development and slow progress of the disease, the marked ascites, and the patient's youth. Such implants may be suspected when ascites is found complicating a slowly progressive ovarian tumor in a young woman. In women over fifty they are extremely rare.

The chief problem at the time of operation is the recognition of the benign character of the peritoneal growths. This is indicated chiefly by their small size and delicate structure. However their borderline position between benign and malignant growths can be established definitely only by a careful microscopic examination. The differentiation is essential for correct treatment.

The possibility of finding tumors of such a type justifies exploration in certain cases of ovarian growths, particularly in young women, in which clinical examination alone suggests an incurable condition. If the implants are found to be benign, their disappearance may be hoped for if the primary growths are removed. When the tumor is technically inoperable, laparotomy alone may have such a beneficial effect that extirpation of the growth will be possible at a second operation. When possible, the principal masses should be removed. When the benign character of the implants is first discovered in the laboratory after simple exploration, the ad-

visability of almost immediate operation should be considered. If recurrence develops or the ascites re-appears some time after the removal of a part of such a growth, a second operation is indicated, as there are records of apparently permanent cures after even a series of four operations.

The histological character of these tumors suggests that roentgen therapy would be of little value, and in certain cases this has been proved true.

GOODELL C. SORRENTINO, M.D.

Klaften, E.: A Further Contribution to the Clinical Manifestations and the Microscopic Anatomy of the Granulosa-Cell Tumors of the Ovary (Weiterer Beitrag zur Klinik und mikroskopischen Anatomie der Granulosa-Zelltumoren des Eierstockes). *Arch f. Gynæk.*, 1932, 4, 443.

The author reports several cases of granulosa-cell tumors of the ovary and reviews 80 cases from the literature. Six (7.5 per cent) of the cases were considered inoperable. In five (6.2 per cent) the condition was bilateral. In 4 (4 per cent) recurrences or metastases developed. In the other ovary there was a cystoma, a dermoid cyst, or a chocolate cyst. Myosarcoma and adenomyosarcoma interna uteri are found in association with the granulosa-cell tumors. From 7 to 8 per cent of the tumors occurred during childhood and puberty, 48 per cent during the child-bearing age, and 42.5 per cent during the menopause.

Of great diagnostic importance is a history of deficient ovarian function with menstrual disturbances over a period of years. The uterine bleeding is more profuse than in tubal pregnancy and, in contrast, is amenable to treatment with pituitary and corpus luteum preparations.

Among 247 ovarian tumors observed in a period of four years there were 106 ovarian cysts, 37 carcinomata, 4 fibromata, and 10 granulosa-cell tumors. The granulosa-cell tumors therefore constituted 4.04 per cent of all ovarian tumors and 2.4 per cent of the carcinomata which, if the granulosa-cell tumors are included, numbered 47. They occur 7 times more frequently than fibromata. Among Klaften's tumors there were some of the folliculoid type, 1 with mixed cylindromatous portions, and others with diffuse proliferations.

Also of great importance is the interpretation of the larger cells as lutein-like from the standpoint of function. Besides the well known hyperplastic effect on the myometrium and especially the endometrium, functional stages of the glands and an increase in the glycogen content of the glandular cells and the stroma cells were found in 3 cases of distinct lutein cells. A classification according to the predominance of various structures (follicularis, folliculoides, cylindromatous, pleomorphic, adenomatous, luteiniformis, granuliformis, diffusum) is not necessary nor justified because this predominance is purely accidental and secondary.

Theoretical consideration of the rarity of metastases leads to the belief that in close analogy to the manner in which follicle maturation is inhibited by

mature follicles and corpora lutea, the tumor cells may exert an inhibitory effect upon the development of distant metastases, since the latter develop only after extirpation of the primary tumor. Athrepsia must also be considered. Of the cases reviewed, 1 was complicated by gastric carcinoma with metastases. Despite rupture of the tumor in some of the cases, implantation did not occur. Worthy of note was the development of a similar retroperitoneal tumor ten years after extirpation of the ovarian tumor. The second tumor was considered, not a metastasis, but a spontaneous development occurring possibly in a misplaced ovarian rest. Metastasis was unlikely because of the very long interim. The twenty-nine-year-old patient had not menstruated before the first operation. Regular menstruation began one year after the operation and she had one full-term pregnancy. The second operation was preceded by a three-year period of amenorrhoea which later alternated with periods of menorrhagia. The menses returned five months after the second operation. Before the first operation the breasts hypertrophied and contained secretion.

ROBERT MEYER (G)

EXTERNAL GENITALIA

Estella, J. Epispadias in the Female (Epispadias del sexo femenino). *Prog de la clin*, Madrid, 1932, xx, 541.

Reports of epispadias in the female, independent of the urogenital tract, are rare. This is probably explained by failure of diagnosis rather than infrequency of occurrence. Durand distinguishes the following three types: (1) that occurring in the clitoris, (2) the subsymphysal type, and (3) the retrosymphysal type.

Epispadias may be present even when the urethra terminates below the clitoris. The dominant anomaly is the shortness of the urethra. This is frequently complicated by partial or complete absence of the superior wall. In some cases both factors may be combined. The epispadias is partial or complete according to whether or not it extends to the bladder and involves the sphincter.

To the three types recognized by Durand the author adds the vestibular and total types. The vestibular type is the most frequent and of the greatest clinical and therapeutic interest. In this type the urethral opening divides the clitoris into halves. The atrophic halves of the clitoris and the aplastic nymphæ continue between the labia majora, but are greatly reduced in size. In the subsymphysal and retrosymphysal types the urethral opening lies outside the vestibule, above or below the symphysis. In both, there is vulvar aplasia. Total epispadias never occurs without exstrophy of the bladder. In this condition the urethra is very small and fissured. Skeletal defects may also be found.

In neither sex can epispadias be considered strictly a malformation in the sense that it reproduces a stage of normal embryonic development.

The chief sign of the condition is incontinence of urine from insufficiency of the urethral sphincter. This may be only partial. It causes irritation of the mucosa and frequent infection.

The treatment depends upon the form of the anomaly and the disturbance of function. It may be possible, by surgical means, to build up at the level of the neck of the bladder an elastic obstacle which will give way to the pressure of the retained urine at a certain limit of resistance, thus forming a passive sphincter. In some cases a myoplastic operation with the formation of an active sphincter may be necessary. The author describes also the technique of other operations involving extensive reconstruction of the involved parts. No one method is to be preferred in all cases.

A. E. TAFT, M.D.

MISCELLANEOUS

Haase, W. The Pathology of Sarcoma of the Female Genital Organs, Particularly, the Uterus (Zur Pathologie der Sarkome weiblicher Geschlechtsorgane besonders der Gebärmutter). *Ztschr f Geburtsh u Gynaek*, 1932, cii, 344.

The statistics reported are for the period from 1925 to 1931. In this interval 53 sarcomata were treated. They included 38 in the uterus (3 of which were not examined histologically), 9 in the ovary (1 of which was not examined histologically), 2 in the labia and clitoris, 1 in the breast, 1 in the skin (melanosarcoma), 1 in the abdomen (a large tumor of unknown origin), and 1 in the bony pelvis (not examined histologically).

A comparison of these cases with other cases showed that sarcoma was found in 53 (0.5 per cent) of 11,000 gynecological cases, 33 (2.0 per cent) of 2,600 tumors, 53 (3.3 per cent) of 1,600 malignant tumors, and 38 (5.2 per cent) of 730 cases of carcinoma of the uterus.

Of the 38 uterine sarcomata, 32 occurred in the corpus and 6 in the cervix, the ratio of the former to the latter being therefore 5:3:10. Of the 6 cervical sarcomata, 3 were definitely portio sarcomata. Thirty-five of the 38 uterine sarcomata developed in the myometrium and 3 from the mucosa. Of the 35 sarcomata arising in the wall of the uterus, 30 (28 intramural and 2 submucosal) originated in myometria. Five of the sarcomata must be regarded as diffuse growths in the myometrium.

Of 710 myomata removed at operation, 30 (4.2 per cent) showed sarcoma.

The majority of the women with sarcoma were between the ages of forty-one and fifty years. Only 5 of them had not been pregnant.

HANS O. NEUMANN (G)

Binet, A. Anæsthesia Used in Gynecological Operations In 1932 (La tactique anesthésique dans les opérations gynécologiques en 1932). *Gynécologie*, 1932, xxxi, 529.

Binet gives a detailed review of the different methods of inducing anæsthesia which were used in

France for gynecological operations in 1933. He classifies them as follows:

1. General anesthesia.
 2. Spinal anesthesia.
 3. Root-blocking anesthesia (a) peridural anesthesia, (b) epidural anesthesia.
 4. Nerve-blocking anesthesia (a) paravertebral and parasacral anesthesia (b) anesthesia of the internal pudic nerve.
 5. Local anesthesia.
 6. Anesthesia of the sympathetic system.
- General anesthesia is induced by (1) inhalation, (2) subcutaneous injection, (3) intravenous injection, (4) medication by mouth, and (5) introduction of the anesthetic into the rectum.

For spinal anesthesia the anesthetic is introduced into the subarachnoid space. Binet reviews the advantages and disadvantages of spinal anesthesia and describes the technique. He believes that Mitkin's method of controllable spinal anesthesia opens new horizons in gynecological surgery.

Peridural anesthesia has the advantages of spinal anesthesia without its disadvantages. It is induced by injecting the anesthetic into the spinal canal at the level of the epidural space. It has no action on the spinal cord, anesthetizing only the anterior and posterior nerve roots. The author describes the technique. The anesthesia is segmental. It lasts about two hours, gives complete relaxation, and permits all major gynecological operations.

Epidural anesthesia affects only the vulvo-perineo-anal region and a part of the vagina. It

therefore may be employed only for very low gynecological operations such as perineorrhaphy. The author describes the technique used to induce it.

In the induction of paravertebral and parasacral anesthesia the anesthetic is applied to the nerve trunks supplying a definite region of the body. The technique for parasacral anesthesia is simpler than that for paravertebral anesthesia. Parasacral anesthesia may be induced by passing the needle through the posterior sacral foramina (transsacral block) or reaching the sacral nerves at their exit from the anterior sacral foramina (presacral block).

Blocking of the internal pudic nerve, a branch of the peridural plexus, results in anesthesia of practically all of the vulvar region. It is suitable for the performance of perineorrhaphy. In obstetrics it produces relaxation of the vulvovaginal muscles which permits the application of forceps and prevents perineal laceration.

Local anesthesia can be used for operations on the abdominal organs only when it is supplemented by some other method. It can be used without supplementary anesthesia for operations on the vulva or vagina.

Anesthesia of the sympathetics is limited in its application and difficult to induce. Blocking of the splanchnic nerves is especially difficult.

The author does not draw any definite conclusions. He wishes only to call the attention of gynecologists to the various methods of anesthesia employed at the present time.

JULIUS A. WOLFE, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Franqué, O von The Early and Differential Diagnosis and the Management of Extra-Uterine Pregnancy (Die Frueh- und Differentialdiagnose und Behandlung der Extrauterinschwangerschaft) *Med Klin*, 1932, II, 989

The first evidences of extra-uterine gestation are presumptive symptoms of pregnancy and absence of menstruation. If, during the course of bimanual examination, which should never be omitted, there is found, besides enlargement and softening of the uterus, a soft mass corresponding to the position of the tube, tubal pregnancy is a possibility and the patient should be hospitalized until the condition has been explained. Even in the presence of indefinite, irregular bleeding without palpatory findings, hospitalization should be urgently advised. In the clinic, where immediate intervention is possible, the Aschheim-Zondek test can be performed. This test, which the author describes in detail, gives a positive reaction as early as four days after conception. Only a positive reaction is indicative of pregnancy with living chorionic villi as the hormones of the anterior lobe of the pituitary gland disappear three days after death of the embryo. There is no immediate danger. Probing of the uterus, curettage, and exploratory puncture as diagnostic procedures are strongly contra-indicated as tubal rupture and ascending infection are not infrequent sequelæ.

The author warns against two possible errors (1) confusion of extra-uterine pregnancy with lateral sacculation of the uterus due to lateral implantation of the ovum within the uterus, and (2) the mistaking of the tubal pregnancy behind the fundus for a retroflexed gravid uterus. The indefinite outline, the immobility, and the pain produced by pressure in tubal pregnancy are in sharp contrast to the distinct outline and the only slight reduction of the mobility of the retroflexed gravid uterus, and the difference in the position of the sacro-uterine ligaments in relation to the soft mass in the pouch of Douglas shown by rectal examination, especially under anæsthesia. These differences should prevent errors which may prove fatal if, in an attempt to replace the supposedly retroverted gravid uterus, the fetal sac of the extra-uterine pregnancy is ruptured.

That in rare cases the diagnosis of extra-uterine pregnancy can be made without an internal examination is evident from the case reported by Hoehne, who recognized in a structure expelled during the last menstrual period, a complete cast of the uterine cavity, the triangular sac of the decidua without an ovum.

Considerations in the differential diagnosis between appendicitis and extra-uterine pregnancy

should not delay the necessary operation. Amenorrhœa, prolonged uterine bleeding, acute attacks of pain in the pelvis which are at first intense and then cramp-like, and the demonstration of a painful enlargement in the affected side are signs of a disturbed tubal pregnancy, the evolution of which to the stage of tubal mole, tubal abortion, or tubal rupture must be prevented by immediate operation. Even with minimal bleeding the peritoneal signs of shock, abdominal distention and pain, a weak and rapid pulse, superficial respirations, a tendency to lose consciousness, and shoulder pain are diagnostic. Anæmia dominates the clinical picture only when there are severe abdominal hæmorrhages. When these symptoms appear suddenly in a woman formerly in good health, causing her to collapse in the midst of her work, the physician must first think of ruptured extra-uterine pregnancy. In any event, the indication for laparotomy is most important whether the condition is an ovarian cyst with torsion of its pedicle, peritonitis due to perforation, or extra-uterine pregnancy. It has happened that a physician first called to treat such a case of collapse has assumed acute poisoning and has performed gastric lavage while fatal bleeding occurred into the abdominal cavity. RUEDEL (Z)

Reeb, M Early Tubal Abortions of Slow Development and Their Diagnosis (Abortements tubaires jeunes à évolution ralentie et leur diagnostic) *Gynec et obst*, 1932, XXVI, 385

When an early tubal pregnancy results in tubal rupture the diagnosis is easy because of the clinical symptoms of intraperitoneal hæmorrhage, but when a tubal pregnancy results very early in tubal abortion the diagnosis is difficult.

The author reports three cases of tubal abortion of very slow development and one case with a more rapid development.

He comes to the conclusion that before the development of a juxta-uterine tumefaction and especially before the formation of a hæmatocele a differential diagnosis between pseudopregnancy, uterine abortion, and tubal abortion of very slow development cannot be made with sufficient surety by macroscopic or microscopic examination of the expelled decidua, by microscopic examination of uterine scrapings, or by biological tests.

A clinical symptom which was noted in all of the author's cases and which Reeb believes might be of great aid in the diagnosis was the persistence of small hæmorrhages—the occurrence of almost daily small losses of blood—after curettage completely removing all decidua from the uterus. In cases of uterine abortion and pseudopregnancy the bleeding ceases one or two days after a thorough curettage, whereas in cases of tubal abortion it continues as

long as the tube contains chorionic villi either still active or without communication with the maternal circulation (Aschheim-Zondek reaction may be negative) and stops only after the ovum has been definitely eliminated from the maternal organism by death, complete absorption, or operation.

ISAAC ANDERSON, M.D.

Rowe, A. W.: The Toxemias of Pregnancy
I. Some Observations on the Hepatic Factor
J. Am. M. Ass., 1932, xlix, 5083.

The author compared the laboratory and clinical findings in the cases of forty women referred for toxic pregnancy with those in the cases of normal pregnant women and also with those in the cases of non-pregnant women with well-established hepatic dysfunction. Evidences of functional disturbances of the liver were found in many but not all, of the toxic series.

A. H. GLADSTONE, JR. M.D.

Harding, V. J., and Van Wyck, H. B.: Researches on the Toxemias of Later Pregnancy
Am. J. Obst. & Gynec. 1932, xlii, 830.

The authors have attempted to interpret the toxemias of pregnancy in terms of a water or sodium balance. They recognize that if their interpretation is true it represents only one phase of a complex problem.

Studies of the effect of the addition of salt to the diet or the use of hypertonic saline solution show that the normal pregnancy remains normal whereas in the toxemic pregnancy the symptoms become exaggerated. A study of many of the older and some of the more recently suggested forms of treatment shows that they cause the removal of water from the body or a change in the internal distribution of water.

At present the edema theory of Zangmeister offers the most unifying view of the toxemias of later pregnancy. However it requires modification to explain the formation of edema in individual organs apart from a general retention of water and the possibility of internal changes in water distribution.

Further progress might be made by a more intensive study of the atypical forms of toxemia and wider recognition, both in theory and in practice, of the value of observations of weight during pregnancy. The variability of the toxemias of later pregnancy is in harmony with the assumption that they possess one origin and a multiplicity of symptoms.

In the discussion of this report VAN WYCK said that one of the striking features of the toxemias of pregnancy is the large number of varying types with a certain common association.

HARRISON said that the opinions of Harding and Van Wyck regarding the nature of the late toxemias of pregnancy are very much in accord with his own. The abandonment of the attempt to find a single cause and an effort to correlate these disturbances with general medical conditions have for many years seemed to be most desirable.

EDWARD L. CORNELL, M.D.

Bartholomew, R. A., and Knecke, R. R.: The Relation of Placental Infarcts to Eclampsia
Toxemias. Am. J. Obst. & Gynec. 1932, xlii, 197.

Placental infarcts are probably due either to gradual interruption of the circulation in a fetal vessel by the physiological endarteritis characteristic of the later months of pregnancy or to an abrupt interference resulting from rupture, thrombosis, or embolism of a fetal vessel brought about by the trauma of fetal movements on the unprotected fetal vessels on the surface or in the substance of the placenta. Disturbances in the maternal circulation are probably secondary.

Infarction is followed by necrosis and catalsis of the affected placental tissues, whereby poisonous protein split-products, such as peptone, histamine, tyramine, and guanidine, are liberated by the proteases present in all cells.

The physiological and pathological effects of these substances are strikingly similar to the clinical and pathological findings in eclampsia. Slow necrosis due to physiological endarteritis permits thrombosis and the formation of a protective zone of hyaline intervillous substance about the affected villi, thus preventing the diffusion of poisonous protein split-products into the maternal circulation. The villous vessels show very little, if any distention or engorgement. Such infarcts are firm and white, and are not responsible for toxemia.

Acute necrosis is probably due to rupture, thrombosis, or embolism in a fetal vessel from the trauma of fetal movements. The affected areas first appear dark and spongy but soon become slightly firmer and brown. Microscopically the villi show necrosis with congested, dilated, or ruptured capillaries and thrombosed vessels. The striking absence of intervillous hyaline substance is probably due to the liberation of peptone which has an anti-coagulating effect and (thereby permits the diffusion of poisonous protein split-products into the maternal circulation with resulting eclampsia).

Toxemia developing gradually over a period of weeks and resulting in eclampsia probably differs only in a more gradual necrosis with more evidence of hyaline intervillous substance and less marked distention of villous capillaries and veins. The circulation is probably not completely obstructed. The infarcts range from yellow to gray and are somewhat soft and more definitely demarcated.

Eclampsia and abruptio placentae probably differ only in the location of the infarcts. In eclampsia, the infarcts are in the substance of the placenta. The intervening healthy placental tissue serves to diffuse the poisonous products and prevents sufficient concentration of histamine to rupture the decidual sinuses and separate the placenta. Hence pregnancy continues until eclampsia occurs. If the infarct is in contact with the decidual sinuses, histamine probably brings about abruptio placentae before eclampsia can develop.

Injecting a Bartholomew filtrate of artificially autolyzed normal placenta into guinea pigs produces

stupor, convulsions, and death. The pathological changes in the kidneys and liver are similar to those found in eclampsia. The fact that the injection of autolysates of other organs may produce similar effects in the liver and kidneys of an animal does not disprove the placental theory of eclampsia, but indicates that the pathological effects are due to protein split-products common to all tissues and varying somewhat according to the chemical composition of the tissue.

It is probable that with a better understanding and recognition of the acute and subacute types of placental infarcts, the association of such infarcts with pre-eclampsia, eclampsia, and abruptio placentae will be found quite constant.

If autolysis of placental infarcts is the cause of eclamptic toxæmia, it follows that until the specific protein split-products can be recognized and neutralized, interruption of the pregnancy before convulsions threaten will continue to be necessary.

In the discussion of this report, MORSE said that gross and microscopic examinations of thousands of specimens have failed to convince him that the degree of infarction plays any particular rôle in the causation of eclampsia. He questioned whether the reaction of the experimental animals would have been the same if the extracts of placenta had been autolyzed.

FRASER said that from an age-period study of placental changes from the time of the development to the maturity of the placenta it is apparent, even in the early stages, that degeneration is to some extent a physiological change. He has always believed that the extensive changes seen in chronic nephritis and some forms of toxæmia may perhaps be aggravated by the toxæmia.

EDWARD L. CORNELL, M.D.

Theobald, G. W. The Hepatic Lesions Associated with Eclampsia and Those Caused by Raising the Intra-Abdominal Pressure. *J. Path. & Bacteriol.*, 1932, xxxi, 843.

A study of forty-four livers from women who died from eclampsia showed degeneration and almost invariably necrosis of the liver cells. Hemorrhage was found in 70 per cent, and fibrinohemorrhagic necrosis in 48 per cent. It is incorrect to assert that typical hepatic lesions are always present in women dying from eclampsia, and it is equally incorrect to deny the existence of lesions which are separate, distinct, and peculiar to eclampsia.

Believing that the increase in the intra-abdominal pressure associated with the eclamptic convulsions might be a cause of, or aggravate the intensity of, the lesions, the author studied the effects of an increase in the intra-abdominal pressure in dogs and cats. With the animal on its back, a liter or more of sterile, normal saline solution was introduced into the peritoneal cavity through a trocar. Then, by means of two abdominal binders, the intra-abdominal pressure was raised to between 80 and 100 cm. of saline solution and was maintained at that level for two

minutes. During the maintenance of the increased pressure, the pressure in the jugular vein sometimes exceeded 35 cm. of saline solution and the arterial pressure fell.

In order to be certain that the saline solution itself played no part in the causation of the hepatic lesions, sterile liquid paraffin was substituted on one occasion. On five occasions the intraperitoneal pressure was raised for two minutes. The animal died the next day while the belly was being compressed for the second time. The liver showed severe degenerative changes. The cortices of the kidney were congested and hemorrhage was found in the lungs and brain.

The author believes that these experiments proved beyond dispute that in dogs and cats severe and even fatal degenerative changes may be caused in the liver by raising the intra-abdominal pressure. The two most interesting features of the experiments were the remarkable variation in the hepatic lesions produced and the speed with which they occurred. Degeneration and necrosis of the liver cells occurred in every case, and Glisson's capsule almost invariably suffered considerably. In some instances the damage was chiefly central, whereas in others the lesions presented no particular lobular distribution.

In the author's opinion it is possible that the fatty changes in the center of the liver lobules which occur during the latter months of pregnancy may be dependent in part on a slight increase of pressure in the hepatic vein. Similarly, the degenerative changes in the liver associated with hyperemesis gravidarum may be caused by prolonged efforts at vomiting which interfere with the hepatic circulation. It is possible also that the damage to the liver during labor is a more potent factor lowering the resistance to puerperal infection than the devitalization of the pelvic tissues.

ALBERT W. HOLMAN, M.D.

Upshaw, C. B. The Conservative Treatment of Eclampsia. *J. Am. M. Ass.*, 1932, xcix, 2088.

This report is based on ninety-one consecutive cases of eclampsia treated at the Grady Hospital, Atlanta, with a maternal mortality of 5.4 per cent. The author concludes that the best results are obtained by controlling the convulsions before attempting to induce labor. At the Grady Hospital an initial dose of $\frac{1}{4}$ gr. of morphine sulphate is given. This is followed by the intravenous injection of 20 c. cm. of a 10 per cent solution of magnesium sulphate which is followed by intramuscular or intravenous injections at hourly intervals to control the convulsions. To assist in reducing the cerebral oedema, maintain the blood volume, and stimulate diuresis, a 25 per cent solution of dextrose is given intravenously in 300-c. cm. injections at intervals of eight hours. After the convulsions have ceased labor is induced by rupturing the membranes. Non-intervention in labor is best for the mother. Anæsthesia should be limited as much as possible. Light ether anæsthesia is probably safest.

A. H. GLADDEN, JR., M.D.

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ISAAC ADLERSTEIN, M.D.

Rowe, A. W.: The Toxemias of Pregnancy
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EDWARD L. CORSELL, M.D.

Bertholomew, R. A., and Krucke, R. R.: The Relation of Placental Infarcts to Eclamptic Toxemia. *Am. J. Obst. & Gynec.* 1932, xxi, 77.

Placental infarcts are probably due either to gradual interruption of the circulation in a fetal vessel by the physiological endarteritis characteristic of the later months of pregnancy or to an abrupt interference resulting from rupture, thrombosis, or embolism of a fetal vessel brought about by the trauma of fetal movements on the unprotected fetal vessels on the surface or in the substance of the placenta. Disturbances in the maternal circulation are probably secondary.

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Injections of a Berkefeld filtrate of artificially autolyzed normal placentas into guinea pigs produces

by the decrease in the size of the uterus following delivery, laparotomy should be performed first to determine the conditions present in the abdominal cavity, the wound then covered provisionally, the uterus emptied vaginally, and the abdominal operation then completed. Abdominal cesarean section with simultaneous appendectomy in the presence of purulent processes is exceedingly dangerous and necessitates extirpation of the uterus and vaginal drainage.

Even the slightest suspicion of appendicitis during pregnancy justifies laparotomy as the patient will not be endangered by this procedure even if the diagnosis is incorrect. The author advises prophylactic appendectomy in all gynecological operations performed on young women.

VILMA JANTSCH-RAŠKOVIĆ (G)

Stieglitz, E. J. Nephritis in Pregnancy. *J Missouri State M Ass*, 1932, XLIX, 505

The author suggests the following new classification of the various types of nephritis in pregnancy.

Type A Syndrome of renal fatigue. Common synonyms: Kidney of pregnancy, nephrosis of pregnancy, albuminuria of pregnancy, low reserve kidney.

Type B Pre-eclamptic intoxication and eclampsia.

Type C Pre-existent renal and/or arterial disease exacerbated by pregnancy. Common synonyms: Chronic nephritis, recurrent nephritis, low reserve kidney (proper application), hypertensive arterial disease.

Type D Coincidental nephritis.

The clinical picture, etiology, prognosis, and treatment of each type are discussed.

In conclusion the author says that the kidneys are predisposed to injury during pregnancy by the increased demands made upon them and the specific intoxication which is attributable to gestation. Clinical phenomena occurring in nephritis, such as edema, arterial hypertension, and cerebral symptoms, must be attributed to the generalized tissue intoxication rather than entirely to renal insufficiency. The tissue intoxication must be borne in mind in the choice of treatment.

The treatment of nephritis must be directed toward (1) eradication or at least amelioration of the cause, (2) reduction of the physiological burden imposed on the kidneys, and (3) improvement of tissue respiration and nutrition.

ROBERT M. GRIER, M.D.

LABOR AND ITS COMPLICATIONS

Lastra, E. T. Prolonged Labor (Parto prolongado). *Boletín Soc de obst y ginec de Buenos Aires*, 1932, VI, 288

The time of labor varies so much that in order to determine whether it is prolonged or not the characteristics of the woman, her condition, and whether she is a primipara or a multipara must be considered.

Labor is a physiological act. It may take place rapidly with a single expulsive pain or may be prolonged for days. In the cases of primiparae the average duration is from twelve to fifteen hours, and in those of multiparae, from six to eight hours. When the time is prolonged, it is the first period which is of importance. Failure of dilatation of the cervix and engagement of the head are anomalies of labor in which the use of hypophysis is dangerous and forceps are of no aid.

For the avoidance, recognition, and correction of abnormalities of labor a thorough knowledge of normal labor is necessary. Labor may be prolonged by mechanical obstruction by the walls or floor of the pelvis, by the fetus, or by the vulva. Dynamic dislocation is also an important factor.

Every month the uterus undergoes preparation for pregnancy. When pregnancy occurs, the uterus hypertrophies with the formation of new tissues.

At the time of labor the uterus contracts not only longitudinally, but also by rhythmical waves in its different diameters. This explains the regular progression of the fetus and the rapid reduction of the large uterine cavity after delivery.

The nerve supply of the uterus is mixed. It consists of a cerebrospinal system, dorsolumbar centers, and the second, third, and fourth sacral nerves. There are also representatives of the sympathetic and parasympathetic systems. Multiple anastomoses connect these three systems to form a plexus which acts by means of motor, sensory, vasomotor, and secretory fibers.

A study of the finer structure of the uterine muscular tissue, including the smooth fibers, the connective tissue, and the nervous system, during the course of the various physiological stages, will explain the great difficulty experienced by the physiologist in clearly understanding the mechanism of uterine contraction.

The presence of elastic fibrils surrounding the smooth fibers and of nerves and sympathetic ganglia in the uterine parenchyma with their terminal fibrils in intimate relation to the muscle cells helps to explain the rhythmical contractions which continue for some hours in tissues preserved in Locke's solution. The intimate relation of their terminals to muscle cells explains also the great sensitivity to the action of the metallic ions, K, Na, Mg, and Ca and the clinical phenomena observed from the action of hormones such as those of the hypophysis and adrenals.

Uterine elasticity depends upon integrity of the muscle, the nervous system, and the vascular system. Tonus is the property which allows intense muscular contraction. This is greater in primiparae than in multiparae.

At the termination of pregnancy the lower segment of the uterus and the membranes are of the greatest importance. If the membranes are not elastic and if they adhere to the lower segment, there is incomplete or no formation of the amniotic pouch at the time of labor. If the amniotic pouch is

Nothmann, M., and Hermetstein A.: Diabetes and Pregnancy (Diabetes und Gravidität) Arch f Gynak 932 cl, 287

Although complications resulting from diabetes during pregnancy can be managed more successfully since the discovery of insulin, the gravity of the association of pregnancy and diabetes is still variously judged. Despite the use of insulin, the prognosis for the child has remained very poor.

The authors report a carefully studied case of diabetes and pregnancy in a woman twenty-eight years of age who had been under treatment for several years and had had four pregnancies. The course of the third pregnancy which had been preceded by two stillbirths, was carefully observed. In the fourth pregnancy the diabetes was very severe but as the result of regulation of the diet and the administration of insulin in doses of from 45 to 75 units daily the urine gradually became free from sugar. However the blood sugar during fasting remained from 250 to 300 mgm. per 100 ccm. In the third month of the pregnancy when the patient was given 47 gm. of protein, 240 gm. of fat 88 gm. of carbohydrates (without vegetables) and 16 units of insulin daily the urine was almost entirely free from sugar. The blood sugar fluctuated between 181 and 215 mgm. per 100 ccm. This improvement in the metabolism continued until about ten days before delivery when a marked decrease in tolerance developed with acidosis.

During labor which was induced twenty days before the estimated date by the Stein method, the blood sugar reached 270 mgm. per 100 ccm. in spite of insulin treatment. At the time of rupture of the membranes, two and one-half hours after the injection of 30 units of insulin, the blood sugar was 201 mgm. per 100 ccm. At the same time the amniotic fluid contained 138 mgm. of sugar, 1 mgm. of acetone, and 31 mgm. of beta-oxylutyric acid per 100 ccm. At the time of delivery the maternal blood contained 107 mgm., the venous blood of the umbilical cord, 88 mgm. and the arterial blood of the umbilical cord, 80 mgm. of sugar per 100 ccm. In the puerperium there was a considerable increase in tolerance and the blood sugar was about 50 mgm. per 100 ccm. with a lower dosage of insulin (30 units daily). This favorable metabolic state was maintained until another pregnancy occurred.

No difficulties were presented even during delivery which was eventually hastened by Christeller's maneuver. The child, a male weighing 3,440 gm. and measuring 55 cm. in length was slightly cyanotic at birth and showed the remarkably low blood-sugar value of 70 mgm. per 100 ccm., which could not be increased by injections of glucose. It lived only two days. Autopsy disclosed cerebral hemorrhage and bronchopneumonia. A more important finding, however was a pancreas three times the normal size with well-developed islands of Langerhans. In the hypertrophy of the pancreas and the resulting hyperfunction the authors see the cause of the hypoglycemia in the infant. The hyperfunction

was not sufficient to improve the metabolic state of the mother as it may in milder cases of diabetes (Holsbach).

The authors call attention to the high fetal mortality during labor in the cases of diabetic women, and consider it advisable to avoid even the slightest possibility of birth trauma in such cases by the use of prophylactic cesarean section. Gause (C).

Basala, V.: Appendicitis During Pregnancy (Appendicitis in graviditate) Lekt. gynekol., 1932, 1, 94.

According to various statistical reports the mortality of appendicitis complicating pregnancy ranges from 25 to 80 per cent whereas that of appendicitis occurring in the absence of pregnancy is 5.8 per cent.

The diagnosis of appendicitis complicating pregnancy is very difficult because the appendix is covered and displaced by the uterus and the clinical symptoms (tenderness at McBurney's point, muscular spasm and distention) are either absent entirely or are very indefinite because of the muscular tension, particularly in the puerperium. When the appendix is displaced upward the process usually does not become localized and diffuse peritonitis develops easily and rapidly. When localization occurs, the coming labor or abortion often causes diffuse peritonitis by breaking down the encapsulating process in decreasing the size of the uterus.

In the differential diagnosis it is necessary to rule out pyelitis gravidarum, cholecystitis, septic peritonitis, and extra-uterine pregnancy.

The author reports three cases of appendicitis occurring in the middle of pregnancy. In the first case a diagnosis of septic peritonitis due to attempted criminal abortion was made. Operation performed sixty five hours after the onset of the attack revealed a perforated appendix with diffuse peritonitis and an intact pregnancy. The patient's life could not be saved. The second patient was operated upon forty-three hours after the onset of the attack. As appendicitis without perforation was found, a simple appendectomy was done. The pregnancy continued without complications. The third patient was suffering from purulent peritonitis from perforation of the appendix. Appendectomy was performed and drainage established through the abdominal wound. The patient aborted after the operation and recovered after a prolonged convalescence.

On the basis of his experience the author advises early operation in all cases of appendicitis complicating pregnancy. In uncomplicated cases, appendectomy alone is sufficient the pregnancy need not be interrupted. When pain is found in the abdomen, thorough drainage is indicated in addition to appendectomy. After the seventh month it will be necessary to interrupt the pregnancy or remove the uterus in order to provide an approach to the appendix or establish vaginal drainage.

When it is assumed that uterine contractions will begin after the operation and there is danger of diffuse peritonitis from disturbance of the adhesions

states that in 17,000 deliveries in the cases of women who had been constantly under clinical surveillance craniotomy on a living child was unnecessary, and that the prevention of this operation therefore depends upon the general practitioner and midwife.

The author reviews also embryotomies performed in 35 other cases (23 decapitations, 3 following craniotomy, 10 exenterations, 4 of which were performed with decapitation, 3 dissections of the fetus, 1 with decapitation, 1 with subsequent delivery of the retained head, and 9 childotomies, 1 of which was the only operation performed). The instruments used were Braun's hook, Zweifel's trachelorrbectes, and Siebold's scissors. The indication was almost always spontaneous or artificially produced neglected transverse position of the fetus.

The author reports a mortality of 7 per cent. Of the 12 women who died, 9 (55 per cent) died as a result of the complications which had necessitated the operation and 3 (18 per cent) died as a result of the operation itself (infection from the operation, uterine rupture following craniotomy, or internal hemorrhage from spontaneous rupture of a parametrial vessel). Puerperal fever developed in 39 (25 per cent) of the cases and soft tissue damage occurred in 70 (45 per cent). STERN (G)

Selitzky, S. A. Principles of Permanent Sterilization of Women During Major Obstetrical Operations and Pathological Deliveries (Principes de la stérilisation définitive de la femme pendant les grandes opérations obstétricales et les accouchements pathologiques) *Gynécologie*, 1932, xxxi, 321

The disorders and complications of pregnancy, labor, and the puerperium may be divided into two groups—those involving the maternal organism, and those involving the fertilized ovum. The question of the advisability of sterilization arises in cases of hemorrhages caused by extra-uterine pregnancy, hydatiform mole, premature detachment of the placenta, infarction of the placenta, placenta prævia, hemorrhages due to atonicity of the uterus after delivery, traumatism due to labor, such as uterine fissures, rupture, and fistulae, lesions of the soft parts of the genital tract, and lesions of the bony pelvis, and neoplasms of the uterus and ovaries.

The author's principle of avoiding sterilization at the time of the first cesarean section (with the patient's consent and after consideration of medical and social factors) is based on the desire to conserve the possibility of maternity and the psychic equilibrium related to it. A conservative attitude is necessary especially when the patient is young, a primipara, or a secundipara without a living child. Of sixty cesarean sections performed on primiparae in the years 1926, 1930, and 1932, thirteen were done for contracted pelvis, five for eclampsia, two for placenta prævia, and eight for premature separation of the placenta. Sterilization was done because of special indications in only two (3.3 per cent). The author allows the patient to make the final decision regarding sterilization.

The mortality of the second cesarean section is now no higher than that of the first. Selitzky never performs sterilization except in the course of another surgical operation. In cases of contracted pelvis he performs it only when it is very definitely indicated. He believes that even in cases of absolute contraction it should not be performed as a separate operation. It is especially contra-indicated as a separate operation if the woman is young, has not been pregnant, or has not gone through labor. It should not be done as a prophylactic measure.

The author concludes from his own observations that placenta prævia and other complications in the same group are not frequently recurrent. Recurrence is most common in cases of hemorrhage due to atonicity, infarction of the placenta, and premature separation of the placenta.

Selitzky has seen more than twenty cases of hydatiform mole. A recurrence developed in only one. In this condition, sterilization is not absolutely excluded, especially when the patient is delivered by cesarean section. It is indicated, not because of the cesarean section but because of a series of phenomena associated with it, the patient's social status, age, number of previous pregnancies, and number of living children.

The tables included in the article show that in the cesarean sections performed in the author's clinic, sterilization was not performed on any primipara. Of all of the complications in the cases reviewed, the incidence of recurrence was highest in extra-uterine pregnancy, averaging from 4 to 6 per cent. In following up his cases of extra-uterine pregnancy, Alexandroff found that women treated for this condition are more apt to have a subsequent normal pregnancy than another extra-uterine pregnancy. In from one-fourth to one-third of the cases there is a subsequent pregnancy with a normal course and spontaneous delivery. The author rarely resects the uninvolved tube in extra-uterine pregnancy, and he never resects it during the first pregnancy.

The complications belonging to the group of puerperal traumatism suggest the advisability and sometimes the necessity of permanent sterilization more often than other complications. The author believes that in cases in which the permeability of the tubes is preserved extreme care should be taken of the patient in subsequent pregnancies, but that sterilization is not indicated in every case, as is held by many obstetricians. Complications involving the soft parts—fistulae, extensive ruptures of the perineum, and injuries causing loss of integrity of the pubic ligament and the articulations of the pelvis—are not frequent. This doubtless explains the almost complete lack of reports in the literature regarding the possibility or permissibility of sterilization in such conditions.

The indication for the removal of fibromata depends upon the situation, size, and number of the tumors. The author prefers to remove fibromata during cesarean section. He believes that in some cases in which the conservative cesarean section is

too tense, it does not form a cone at the moment of contraction or dilate the cervix and it presents an obstacle to descent and presentation. For the pains to increase progressively it is necessary for the lower segment and the inferior pole of the amniotic sac to be distended simultaneously.

The most frequent cause of prolongation of labor is the dissipation of dynamic function. Prolonged labor destroys the patient's resistance.

Before labor the condition of the patient should be watched carefully. Prophylaxis should include also the correction of abnormal presentation. During labor the position of the patient is important. When labor is prolonged, rupture of the membranes is indicated in the first period of dilatation. When the amniotic pouch is well formed, it should not be disturbed. In the second period of dilatation there should be no interference with the pouch if it acts as a dilator but if dilatation is not progressing the membranes should be ruptured.

For the inertia of atony the administration of hypophylin is indicated, and for cervical resistance and hypertonia the administration of sedatives such as opium (spasmodine). Spasmodine is well tolerated and lessens pain, spasm, and hypertonia. To prevent fatigue and shorten the first period of labor sedatives should be used promptly.

Ten cases of prolonged labor are reported.

A. E. TART M.D.

Uhde, W. The Maternal Mortality of Abdominal Cesarean Section with Respect to Rupture of the Membranes, Previous Vaginal Examinations, Previous Vaginal Operations, and Fever of Genital Origin. A Statistical Report on 127 Abdominal Cesarean Sections Performed in the Gynecological Clinic of the University of Cologne in the Period from April 1, 1924 to January 1, 1928 (Die mütterliche Mortalität der abdominalen Schrittentbindung unter besonderer Berücksichtigung des Blasenrisses, vorangegangener vaginaler Untersuchungen, oesangsgegangener vaginaler Eingriffe und von genitalbedingtem Fieber. Ein statistischer Bericht über 127 in der Zeit vom 1. April bis 31. Januar 1928 der Uni-ersität Koeln ausgeführten abdominalen Schrittentbindungen) 93 Cologne, Dissertation.

Of the 127 cesarean sections reviewed, 31 were done by the intraperitoneal technique, 104 by the extraperitoneal technique, and 11 by the Porro technique. Before rupture of the membranes the intraperitoneal section was done in 70.4 per cent of the cases, whereas after rupture of the membranes the extraperitoneal section was done in 50.1 per cent. The Porro section was performed as often before as after rupture of the membranes.

The maternal mortality is divided into (1) total mortality (2) operative mortality and (3) mortality due to infection. In cases in which the operation was performed before rupture of the membranes the total maternal mortality was 11.4 per cent, and in cases in which the operation was performed after rupture of the membranes it was 6.8

per cent. In both groups the so-called operative mortality was 3 per cent and the mortality due to infection, 3 per cent. Before rupture of the membranes, intraperitoneal section had a higher operative mortality (5.7 per cent) than extraperitoneal section (1.03 per cent). After rupture of the membranes, the maternal mortality was 4.6 per cent in the cases in which an intraperitoneal section was done and 3.3 per cent in those in which an extraperitoneal section was done. No appreciable difference in the mortality was noted in cases with or without a previous vaginal examination or in those in which a previous vaginal examination had been made in the clinic or before the patient's admission. F. SANCER (G).

Steenes, H. One Hundred and Sixty Two Destructive Operations Performed at the Gynecological Clinic of Cologne in the Period from April 15, 1924, to April 15, 1928 (Über 162 zerstörende Operationen an der Koelner Frauenklinik, vom 1. April 1924 bis 15. April 1928) 1928 Cologne, Dissertation.

Of more than 16,607 deliveries during a period of six years, a destructive operation was necessary in 162 (0.98 per cent). In 127 (78 per cent) of the latter a craniotomy was done. Sixty-six of the operations were performed on the presenting head and 3 upon the after-coming head. Other destructive procedures were performed in 35 cases. As the majority of the mothers entered the hospital with a living fetus, the author discusses the indications for the operation, the unfavorable factors, and the errors. He then describes the technique of the operations.

In 93 cases of craniotomy performed on the presenting head of the dead fetus, the indications for the operation were as follows:

1. In 4 cases, dangers threatening the mother: threatened uterine rupture (3 cases), placenta praevia (4 cases), eclampsia (4 cases), compression and edema of the maternal soft parts due to a contracted pelvis or a large fetal head (3 cases) and infection (7 cases).

2. In 13 cases, disproportion between head and pelvis: hydrocephalus (2 cases), contracted pelvis (9 cases) and binoval position (4 cases).

3. In 35 cases, prophylactic craniotomy was performed upon a dead fetus to prevent injury to the mother.

Perforation of the after-coming head was performed in 3 cases in which the fetus was dead. The indications were contracted pelvis, hydrocephalus, an abnormally large fetus, insufficient molding of the head, transverse position and premature delivery in cases with incompletely effaced or rigid soft parts.

Craniotomy on the living child was necessary in 3 cases (1.8 per cent of the destructive operations, 2.8 per cent of the craniotomies) and 0.018 per cent of the deliveries. In these 3 cases the women were admitted to the hospital too late, at a time when cesarean section was contra-indicated. The author

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Rizzi, R. The Symptoms and Diagnosis of Congenital Reno-Ureteral Anomalies (Sintomatologia e diagnosi delle anomalie congenite reno-ureterali) *Arch ital di urol*, 1932, ix, 377

The author reviews forty-nine cases of anomaly of the urinary tract which were studied in the past three years in the urological clinic of the Maggiore Hospital of the Royal University of Milan. They included one case of renal aplasia, two cases of renal hypoplasia, two cases of pancake kidney, two cases of horseshoe kidney, ten cases of anomalous hilar vessels, fifteen cases of anomaly of the renal pelvis, six cases of ectopic kidney, four cases of polycystic kidney, three cases of stenosis of the ureter, two cases of congenital aplasia of the ureteral papilla, and two cases of congenital stenosis of the ureteral papilla.

The study showed that congenital anomalies of the urinary tract are more common on the right side than on the left side, and more common in females than in males. There was no evidence of any hereditary tendency toward renal malformation. The anomaly was detected most frequently between the ages of twenty and thirty years and rarely in youth or old age. The most common symptom is pain. This may be contralateral. In polycystic and ectopic kidney the pain may be localized, but in itself is of little diagnostic aid. Fever, retention, and hematuria may occur just as in non-congenital lesions. Hematuria is common because the renal anomaly is often associated with vascular lesions and an anomaly of the endorenal circulation. Congenital renal anomalies may be accompanied by congenital malformation of other organs. Often the diagnosis of congenital renal lesion can be made by simple palpation. Examination of the urine yields little conclusive evidence. Cystoscopy either alone or supplemented by the use of dyes is frequently of great aid in the diagnosis, but in the author's opinion the best diagnostic measure is pyelography.

EUGENE T. LEDDY, M.D.

Cecil, H. L. The Prevention of Severe Reactions Following Pyelograms and Kidney Operations *J Am M Ass*, 1932, xcix, 1652

The author believes that some of the severe reactions and deaths following pyelography and kidney operations might be prevented, particularly as it has been proved that an intrapelvic pressure exceeding 20 mm Hg is dangerous and that, as the pressure is increased, the danger is increased in almost geometrical progression.

Hinman and Lee-Brown, in their work on pyelovenous backflow, proved that when too much pres-

sure is produced within the renal pelvis the mucosa is ruptured and the solution escapes into the venous system. Therefore if the solution is toxic and a lethal dose is given, death results.

The toxicity of the opaque medium is not the only toxic factor to be guarded against. The kidney to be studied pyelographically is often filled with infective urine, a small amount of which, if carried over into the blood stream, would doubtless become the immediate cause of a more or less severe septicæmia. In nephrectomy on a pyonephrotic kidney, particularly when the infection is tuberculous, it is important to avoid squeezing the kidney as this degree of trauma is sufficient to produce a mechanical dissemination of the renal infection into the venous system. Walker found a very intimate communication between the disease process and the blood vessels and lymphatics.

The author reports a case of tuberculous septicæmia and two cases of colon bacillus septicæmia which he believes were caused by pyelovenous backflow.

In the first case a stone blocked the outflow of urine at the ureteropelvic junction and the ureter was ligated without emptying the kidney pelvis. Firm grasping of the kidney to deliver it caused sufficient pressure to produce a pyelovenous backflow with the resulting formation of multiple abscesses.

In the second case also the outflow of urine was blocked by a stone. The kidney was manipulated and delivered before the pressure was released by removal or displacement of the stone.

In the third case there was a wide dissemination of tuberculosis following a difficult operation on a tuberculous pyonephrotic kidney. The ureter was tied before the kidney was emptied of pus, and the manipulation was sufficient to cause pyelovenous backflow.

The author concludes that, particularly in cases of renal tuberculosis, it is advisable to drain all of the pus and urine from the kidney pelvis before undertaking pyelography or operation. The injection of the opaque medium for pyelography should never cause pain.

CLAUDE D. HOLMES, M.D.

Bastenie, P. Contribution to the Anatomoclinical Study of Malignant Tumors of the Kidney in the Adult, Particularly Hypernephroma (Contribution à l'étude anatomo-clinique des tumeurs malignes du rein chez l'adulte, en particulier des tumeurs hypernéphroïdes) *Bruxelles-méd*, 1932, vii, 1441

The author made an anatomoclinical study of fifty-nine malignant tumors of the kidney, fifty-three of which were neoplasms of the type called "hypernephroid."

performed in the presence of fibromyomata sterilization may be indicated because of the patient's age, the number of her previous pregnancies, and her social status.

In the author's opinion exhausting labors, obstetrical shock, and puerperal complications are not indications for sterilization. PAGE.

PUERPERIUM AND ITS COMPLICATIONS

Litzenberg, J. C.: Preventable Invalidities Following Childbirth. *J Am M Ass* 932 xlv, 740.

The author emphasizes that postpartum care must be continued until the mother is restored to perfect health. He divides the puerperium into 3 periods: (1) the immediate puerperium, i.e., the first two weeks after delivery, (2) the intermediate puerperium from the second to the sixth week, and (3) the remote puerperium, which ends only when all delay of normal processes and all complications of pregnancy and labor have been corrected. A common cause of slow recovery after delivery is anemia.

Of 1,000 cases of childbirth, the author found uterine retroversion at the end of the intermediate puerperium in 25 per cent. In 90 per cent the condition was cured by the use of a properly fitting pessary. When the use of the pessary was delayed for even a short time beyond six weeks after delivery the incidence of cure dropped rapidly until, at the end of three months after delivery failure was the rule.

The author calls attention to the fact that chronic cervicitis is not a trivial lesion. It is a focal infection with far-reaching possibilities, potentially a precancerous condition. Therefore every child-bearing

woman with cervicitis should be treated until all evidence of the condition has entirely disappeared. WALTER W. HODGINS, M.D.

Estol, J. C.: Treatment of Puerperal Septicemia with Large Doses of Serum and Autogenous Vaccines (Tratamiento de la septicemia puerperal por suerosoterapia & altas dosis y autovacunas). *J Fac de med U de Montevideo* 932, xlv, 201.

The author has treated a number of cases of puerperal septicemia with large doses of serum. Many of the patients who recovered received daily intravenous injections of from 200 to 400 c.c.m. of an antistreptococcus serum which was made at the Hygienic Laboratory of Montevideo. It is important to begin the treatment as early as possible. As soon as the nature of the condition is recognized as intravenous injection of 200 c.c.m. is given very slowly. In very grave cases this dose is repeated after from twelve to twenty-four hours. If there is still no improvement, daily injections are continued until the patient has received from 1,000 to 1,200 c.c.m.

Symptomatic improvement usually takes place rapidly. Anxiety and prostration give way to a sense of well being. Thirst and dryness of the tongue disappear. Diuresis is stimulated, and perspiration occurs freely. Chills cease, and the temperature falls, sometimes by crisis and sometimes by lysis. Leucocytosis with a marked polymorphonuclears is stimulated.

The technique of manufacture of the streptococcus sera and vaccines is described, and nineteen cases treated with sera and vaccines are reported in detail. WILLIAM R. MILLER, M.D.

GENITO-URINARY SURGERY

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The author made an anatomoclinical study of fifty-nine malignant tumors of the kidney, fifty-three of which were neoplasms of the type called "hypernephroid."

The anatomical study demonstrated that most of the tumors to which this name is applied are cancers of the kidney. It is possible, however, that there are true hypernephromata.

The anatomoclinical characteristics of all malignant tumors of the kidney are exactly the same, whatever the histological character of the neoplasms. The diagnosis of hypernephroma cannot be made clinically, and even the differentiation between sarcoma and carcinoma is usually impossible clinically.

From the anatomical point of view the author emphasizes:

1. The frequency and importance of compression and tumoral thrombosis of the inferior vena cava.
2. The fact that in more than half of the cases studied the tumor had not invaded the renal pelvis.
3. The peculiarities of pulmonary, cerebral, and osseous metastases.

A study of the pulmonary metastases permitted the differentiation of a hematogenous type, a lymphogenous type occurring by the transdiaphragmatic route, and a mixed type. Recognition of the direct lymphatic route—the route by which sarcomatous tumors and hypernephromata with a sarcomatous aspect are disseminated—is of importance as recognition of pulmonary metastases of such origin suggests the presence of a renal tumor, and if this suspicion is confirmed, it establishes the prognosis because such metastases indicate invasion of the periaortic glands.

In agreement with the anatomical findings, the symptoms in most of the cases studied by the author differed from the classical symptoms.

Malignant tumors of the kidney may be divided into two main groups:

1. The typical forms, with frequent invasion of the renal pelvis, pain, a palpable mass (in from 65 to 80 per cent of cases) and hematuria (in from 70 to 90 per cent of cases).

2. The atypical forms, without invasion of the renal pelvis, hematuria, or a palpable mass, and with disturbances due chiefly to compression (stenosis of the vena cava, digestive disturbances, pain) and the early formation of metastases.

Hematuria was present in only 44 per cent of the cases reviewed by the author. Fifty five per cent of the tumors studied were atypical.

The symptoms of metastases are summarized briefly as follows:

1. Cerebral metastases: exacerbations of cerebral phenomena, sudden, transitory and repeated losses of consciousness.
2. Osseous metastases: painful metastases on the surfaces of the bones.
3. Pulmonary metastases: pain, dyspnea, cyanosis, attacks of coughing, and hemoptysis.

Sperminato, C.: Primary Tumors of the Ureter (Tumori primitivi dell'uretere). *Arch. ital. di urol.* 1934, 12, 347.

To the eighty-eight cases of primary tumor of the ureter reported in the literature the author adds a

case observed by him in 1930. His patient had a tender mass in the right lumbar region and hematuria. The diagnosis was made by cystoscopic examination which revealed the tumor obscuring the ureteral meatus. The neoplasm was removed by block dissection (partial resection of the bladder and ureteronephrectomy). It proved to be a squamous-cell epithelioma. The author compares the findings in his case with those in other cases.

COSSIMO T. LAVORI, M.D.

Wharton, L. R.: The Innervation of the Ureter with Respect to Denervation. *J. Urol.* 1934, 32, 639.

In the cases of two patients who for years had suffered severe ureteral pain and had not been relieved by other methods of treatment, marked clinical improvement followed stripping of the ureters from the level of the third lumbar vertebra to the bladder. The benefit resulting in these cases led the authors to make an anatomical study of the innervation of the ureter.

They found that the ureter receives a nerve supply which is independent of the innervation of the kidney and bladder. These nerves go directly to the ureter from: (1) the lowest renal ganglion at the upper end of the spermatic plexus, and (2) the abdominal sympathetic (aortic, hypogastric and pelvic plexuses). The dissections showed also that there is a connection between the ureteral innervation and the plexuses supplying the ovary testis, and parietal peritoneum.

From the physiological standpoint, the authors conclude that cutting these ureteral nerves, as is done in a ureteral denervation, does not interfere with the motor function of the ureter and does not cause atony, hydro-ureter, or any other ureteral disturbance. They believe that one of the functions of these ureteral nerves is the transmission of painful sensations.

HENRY L. SAXTON, M.D.

BLADDER, URETHRA, AND PENIS

Smith, G. K., and Engel, L. P.: Neurogenic Vesical Dysfunction in Children. *J. Urol.* 1934, 32, 675.

The authors discuss the neuro-anatomy and physiology of the component parts of the bladder and review thirteen cases of neurogenic dysfunction of the bladder in children. In nine of the cases reviewed there was definite incontinence with no associated retention, and in four there was retention with ability to void small amounts with difficulty and with no enuresis or diarrhea. In seven of the nine cases with definite incontinence there was a functional defect in the lower part of the spine. A spinal abnormality was found also in one of the four cases of retention.

The normal motor function of the bladder is maintained by balanced innervation from two divisions of the autonomic system, the sympathetic and the parasympathetic. The parasympathetics

are capable of carrying on bladder function independently. The sympathetics have a brake-like action on the sphincteric outlet. It appears that incontinence and retention are due to faulty innervation from the parasympathetics caused usually by an osseous defect in the lower spine.

The treatment of these cases is essentially surgical. The primary consideration should be the correction of nerve impingements due to the osseous spinal defect. In cases of incontinence, re-inforcement of sphincteric control should be attempted by the transplantation of muscle into the perineum around the urethra or a plastic tightening of the vesical sphincter. In cases of retention, resection of the sympathetic (presacral) chain will release the brake like action on the sphincter and may restore good emptying power. THEODORE P. GRAUER, M.D.

Oberlin, S. Perineal Hernia of the Urinary Bladder (Hernie périméale de la vessie). *Bull. et mém. Soc. nat. de chir.*, 1932, LVIII, 1237.

Perineal hernia of the bladder is extremely rare. In 1928, Lernati was able to collect only twelve cases. The author reports two cases. Twelve of the fourteen cases were those of women.

Two types of perineal hernia are distinguished, the median and the lateral. In the median type, which is due to an abnormally deep cul-de-sac of Douglas, the hernia passes through the anus or vagina. In the lateral type, the penetration is through the levator. After trauma, an anterior form of hernia may occur through the urogenital diaphragm. The usual route is between the levator and the ischiococcygeal muscle.

One of the cases of perineal hernia reported by the author was that of a woman forty-four years of age who presented a fluctuant mass in the posterior portion of the left labium majus. The mass appeared to extend from the gluteal region. By pressure, the contents could be made to return to the pelvis. The mass could be felt compressing the left wall of the vagina. It appeared to originate anteriorly in the pelvis and to pass downward and backward. Cystoscopic examination revealed a vast groove in the base of the bladder and a lateral narrowing of such degree that both ureteral orifices were brought within a single field of the cystoscope. At operation, the bladder was found to pass through a large defect in the levator. Repair was unsatisfactory as the hernia recurred at the end of two years.

ALBERT F. DE GROAT, M.D.

GENITAL ORGANS

Nylander, P. E. A. Investigations on Genital Tuberculosis in Males, with Special Consideration of the Results of Epididymectomy (Untersuchungen neber die Genitaltuberkulose der Maenner, mit besonderer Beruecksichtigung der Epididymectomy). *Acta Soc. med. Fennicae Duodecim*, 1932, B, LVII, No. 1.

In the treatment of genital tuberculosis in the male during the period from 1895 to 1899, castration

was done in 86.7 per cent and epididymectomy in 13.3 per cent of the cases. In the period from 1900 to 1909, the corresponding percentages were 43.8 and 56.2, in the period from 1910 to 1919, they were 47.9 and 52.1 per cent, and in the period from 1920 to 1928, they were 43.5 and 56.6.

In the 70 cases of castration reviewed by the author there were 3 deaths. One of the patients who died was a child. Attention is called to the fact that operative treatment was given relatively often even in cases with an unfavorable prognosis, such as those with associated pulmonary and renal tuberculosis. The reason for this in some cases was the relatively poor social condition of the patient which required quick relief. The 2 adults who died had a high temperature previous to the operation. In a study of the temperature of castrated patients the author found that as a rule it was relatively low. In 59.1 per cent of the cases there was no fever and in 27.3 per cent the temperature was subfebrile.

In the investigation of the subsequent fate of the patients who survived, a rather high mortality from tuberculosis was found. Of 37 deaths, 30 were due to tuberculosis, 5 to another cause, and 2 to an unknown cause. In 20 cases death was due to pulmonary tuberculosis, a fact which indicates the great importance of general treatment for tuberculosis.

Of 25 patients without complications who were treated by unilateral castration, 17 were cured of their genital affection, 6 died, and 2 developed a recurrence within three years. Of 5 patients with prostatic and seminal vesicle complications, 3 remained free from recurrence during observation for three years and 2 died. Of 4 with simultaneous renal tuberculosis, 2 were cured, 1 died, and 1 developed a recurrence within 3 years. Of 7 with associated pulmonary tuberculosis, 3 were cured, 4 died, and 2 developed a recurrence.

Of the patients who were subjected to bilateral castration, 3 had changes in the prostate and seminal vesicles and 2 had pulmonary tuberculosis. Of each group, 2 were cured and 1 died.

On comparing the results of epididymectomy and castration, the author found that during a three-year period of observation the incidence of cure in the unilateral cases in which the tuberculous process was limited clinically to the genital tract was the same after both types of treatment, i.e., 33.3 per cent. The results in cases with associated pulmonary and renal tuberculosis were nearly the same.

In discussing the indications for operation, Nylander says that the question whether, in general, operative treatment, roentgen treatment, or absolutely conservative methods should be employed, is not yet decided definitely.

He concludes that even in the cases in which small gross foci are found in the areas of the testicle adjacent to the epididymis, epididymectomy with partial resection of the testis should be tried when the patient is young, and that primary castration should be done only in the cases of older men.

LOUIS NETWELT, M.D.

Continée, X. J., and Mériot, L.: Two Cases of Hydrocele Secondary to Torsion of the Hydatid of Morgagni (A propos de deux cas d'hydrocèle secondaire à la torsion de l'hydatide de Morgagni) *Ann. d'hist. nat.*, 193, 12, 703.

The etiology of hydrocele of the tunica vaginalis still remains obscure in some respects. If it is believed that all hydroceles are secondary, it must be acknowledged that the primary factor is often unrecognized even at operation.

The two cases of hydrocele reported by the authors were those of a man forty-four years of age and a boy twelve years of age. In the case of the man operation revealed within the hydrocele sac a free white fibrous body the size of a pea, and in the case of the boy three such bodies the size of millet seeds. In neither case could the hydatid of Morgagni be discovered. In the case of the man, a reddened elevated area was found near the epididymis at the usual site of attachment of the hydatid. As in both cases the sac contained a reddish yellow fluid and the hydrocele was of only a few months' duration, the authors conclude that the hydatid of Morgagni had become amputated by torsion and had caused an effusion by its irritating action as a foreign body.

CLAYTON R. BATES, M.D.

MISCELLANEOUS

Thompson, A. R.: The Clinical Aspect of Bacillus Coli Infection of the Urinary Tract. *Gay Hosp. Rep.*, Lond., 934, 1931, 375.

The author believes that urinary infections and so-called bacteriuria in which the urine is hazy because of the presence of bacteria but contains little or no pus are often associated with congenital or acquired contributory causes. Among the latter are mental stricture, stricture of the urethra, enlargement of the prostate, cystocele, diverticula of the bladder (cabs) and other nerve lesions affecting micturition, hypospadias, aberrant renal blood vessels, reduplication of the renal pelvis and ureter and stenosis of the ureter. These causes must be treated with the infection.

As treatment of colon bacillus infection of the urinary tract Thompson recommends the use of colon bacillus vaccine and urinary antiseptics, a bland diet, and measures to promote intestinal elimination. Of the urinary antiseptics, he prefers a mixture of 6 gr. each of boric acid, urotropin, and papain.

THEODORE F. GAUER, M.D.

Laguna, R. L.: The Serological Diagnosis of Gonorrheal Infections Employing as Antigen an Emulsion of Pus from Acute Specific Urethritis in Phenolized Saline Solution (Salers d'acridine de la gonococcie capsulante como antigeno una emulsion de pus uretral biocromogre de uretritis agudas en soluciones salinas fenicadas) *Arch. de med. cong. y especial.*, 1932, 226, 920.

In an attempt to find the greatest specific sensitivity in the serological diagnosis of gonorrhea the

author used as an antigen an emulsion in phenolized saline solution of a purulent exudate from cases of acute specific urethritis. The pus selected was obtained from cases of acute specific urethritis between the fourth and tenth day of the infection. The glass was first washed with alcohol and sterile normal saline solution. The pus from the urethra was emulsified in normal saline solution until a turbidity equal to that of Cohn's antigen was obtained. More or less equal quantities of the emulsions obtained from eight to ten patients were mixed so as to give the antigen polyvalency. To the mixture phenol was added in the proportion of 0.5:100. To determine the antigenic value of the antigen titration is necessary especially after the first month as in three or four months the antigen becomes useless.

The value of this antigen was compared with that of Cohn's antigen in sixty cases—forty cases of gonorrhea and twenty controls. The cases of gonorrhea included twelve of acute urethritis, eight of chronic urethritis, three of cervicitis, five of adenitis, one of bartolinitis, one of pelvic peritonitis, two of orchitis, and eight of arthritis. Twelve of the control subjects were normal persons. The techniques employed are described in detail.

When the inactivated serum was used there are no unspecific results although the author mentions having noted none in later investigations. The incidence of positive results in the cases of gonorrhea was 80 per cent when the pus antigen was used and 85 per cent when Cohn's antigen was used. The results with both were parallel except in the case of acute and chronic urethritis, in which Cohn's antigen was superior.

When the active serum was used, unspecific results were obtained in 20 per cent of the control group. These reactions were weakly positive (+ and ++). In the cases of gonorrhea the incidence of positive results was 65 per cent when the pus antigen was used and 67.5 per cent when Cohn's antigen was used, the difference being due to the cases of chronic cervicitis. The incidence of neutral reactions in the total number of cases was 13.3 per cent.

In conclusion the author says that the pus antigen is easy to prepare and yields results which closely approximate those obtained with Cohn's antigen. Its only disadvantage is its quick deterioration.

W. H. MARSHALL, M.D.

Prieto, J. G.: The Biological Treatment of Subacute Lymphogranulomatosis with Intravenous Injections of Specific Antigen (El tratamiento biológico de la linfogranulomatosis subaguda con inyecciones intra venas de antigeno específico) *Arch. de med. cong. y especial.*, 1932, 226, 925.

Biological therapy was first used for subacute lymphogranulomatosis by Delbet, Berury and Menegaux, who injected hypodermically an extract prepared from portions of glands obtained from the patient. This treatment was beneficial, but was not generally adopted because of the great difficulty of obtaining an absolutely sterile extract and because

it necessitated a surgical operation to obtain the glandular tissue from which the extract was made. The discovery by Frei of the specific antigen which now bears his name resulted in a new method of treating the disease. This antigen was first injected intravenously by Heherstrom, in 1931. Instead of the 1:5 dilution of lymphogranulomatous pus which is employed today, Heherstrom used a dilution of more than 1:8 and filtered the antigen.

After Heherstrom's work the author reported five cases, and Ravaut, Levaditi, and Maisler reported six cases, which were treated with good results by intravenous injection of the antigen. Ravaut, Levaditi, and Maisler employed an antigen prepared from the brains of monkeys with lymphogranulomatous meningo-encephalitis. Prieto used three different antigens: (1) one prepared with pus from a case of the classical form of the disease, diluted in physiological salt solution, and heated to a temperature of 60 degrees C for an hour on three consecutive days, (2) the same antigen filtered through filter paper, and (3) an antigen prepared from pieces of typical glands ground up in salt solution, filtered through filter paper, and inactivated for an hour at a temperature of 60 degrees C on three consecutive days.

Prieto has used this form of treatment in four cases of inguinal lymphogranulomatosis, three cases of rectal stenosis due to lymphogranulomatosis, and control cases. All of the cases of the inguinal lymphogranulomatosis were cured by five injections, none of which was more than 0.8 c cm. There was only one recurrence. This developed in a patient who discontinued the treatment too soon and was cured by a second course of treatment. In all of the cases there was at first a severe febrile reaction which reached its maximum of from 38 to 41 degrees C after from twelve to eighteen hours and subsided in

the succeeding twenty-four hours. In the controls there was no reaction whatsoever.

In starting the treatment it is advisable to use filtered antigen in order to prevent a very severe initial reaction. After desensitization has occurred, an unfiltered antigen may be employed. The treatment is well tolerated and can be used even for ambulatory patients.

The author believes that the antigen is specific in its action. He bases this opinion on a comparison of its results with those obtained with pyrogenetic substances, the fact that only persons with the disease have a systemic reaction following its administration, and the fact that the reaction gradually subsides as the injections are continued.

Of the author's three patients with rectal involvement, one, who had an incipient lymphogranulomatous rectal stenosis with a positive Frei reaction, was cured. The two others, who had a definite stenosis, responded to the antigen with systemic reactions, but were not benefited clinically.

Prieto concludes that the intravenous injection of lymphogranulomatous antigen constitutes the treatment of choice for the disease of Nicolas and Favre. The violent general reactions he believes are manifestations of specific sensitization. These reactions gradually decrease, and after the fourth injection, which is from four to eight times larger than the first, they do not occur. The desensitization is only temporary. It is probably independent of the therapeutic results as it was noted in the cases of rectal stenosis which were not benefited by the treatment. The intravenous injection of the antigen constitutes a better diagnostic procedure than the intradermal test. As treatment, it should be employed in all cases of lymphogranulomatous rectal stenosis before surgery is considered.

W. H. MARTINEZ, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Girdlestone, O. R.: The Response of Bone to Stress. *Proc. Roy. Soc. Med. Lond.* 1932, xxvi, 55.

The activity of the bone cell is controlled by Wolff's law as the osteoblasts build or break down according to the stresses to which they are subjected.

Osteocytes, fibrocytes, and histiocytes exert an influence on the upkeep and repair of bone.

The osteocytes are capable of osteolysis or osteogenesis.

The osteoclasts appear to be concerned with active demolition rather than passive solution of bone.

The relation of fibrocytes and fibroblasts to fibrous tissue is the same as that of osteocytes to bone.

Histiocytes are monoblastic cells which are capable of building any unspecialized tissue.

Function causes a definite response in bone, as is shown by the crystallization of the lines of force.



The crystallization of the lines of force.

Circulation is a factor as hyperemia is necessary for hypertrophy. However this requires some directional influence from heredity or physical or chemical environment.

Soon after a bone is placed at rest the osteolysis of disuse begins. Osteolysis is produced also by disease.

If sufficient force is applied to a bone the cells are stimulated, but as the force is increased the effect is changed from the physiological stimulus of function to injury and osteoclasts instead of osteogenesis results.

Osteogenesis is deranged by defects in the chemical supply especially calcium and phosphorus and Vitamin D and is completely stopped by an active tuberculous focus. *EVANS J. BARNES, M.D.*

Ross, D.: A Method for the Production of Increased Compression Strength of Bone: An Experimental Study. Preliminary Report. *Bra. J. Surg.* 1933, xx, 337.

The author first cites an experiment carried out by Archibald. In a case of fragilitas osium, Archibald removed a longitudinal section of bone, measured it into small bits, replaced the fragments in the cavity and sutured the periosteum over them in the hope that he might thereby strengthen the bone and decrease the tendency toward repeated fracture. As the results were unsatisfactory the author at the suggestion of Archibald, undertook an experimental investigation along the same lines on the long bones of young adult dogs. One leg was used for operation and the opposite leg for a control. After the operation the bones were tested in a small Olsen machine with a capacity of 10,000 lbs.

The author first employed the method used by Archibald, but testing after the operation disclosed no appreciable difference between the compression strength of the bone operated upon and the control bone. It then occurred to him that, as ossification can take place in muscle, the implantation of an isolated muscle graft into the medullary cavity might increase the size and thereby the strength of the bone. Such implantations were done in fifteen dogs, but final tests were possible in only four survivors. In three of the latter the compression strength of the bone operated upon was very definitely greater than that of the control bone and cross-sections of the bone operated upon seemed to show a conversion into fibrous tissue and eventually into bone. The sections revealed also a thickening of the cortex and an increase in circumference. After the operation the ordinary laboratory diet was given and no splinting was employed. The animals were killed at periods ranging from seventy-four to two hundred and sixty days after the operation.

The author draws the following conclusions:

1. Isolated muscle grafts inserted in the medullary cavity of the bone disappear and are replaced by fibrous tissue and ultimately by new bone.

2. The increase in new bone increases the compression strength.

3. While it is generally assumed that the interposition of muscle in fractures prevents union, these experiments indicate that union will occur in the usual time if the circulation to the muscle is cut off.

ROBERT C. LOVINSKY, M.D.

Rocher, H. L., and Roudil, S. Excessive Ossification, Léri's Disease (La pléiostose, maladie de Léri). *Bordeaux chir.* 93, N. 4, 139.

Multiple premature ossification of the epiphyseal resulting in deformity stiffness, or limitation of

movement of the joints was first described by Léri in 1921. Premature disappearance of the epiphyseal line results in abnormal shortness of the bones.

The case reported by Léri was that of a man thirty-five years old who was 5 ft., 2 in. tall. The findings in this case included bilateral curvature of the humerus, limitation of motion of the shoulder, elbow, wrist, fingers, hip, knee, and foot, external rotation of the femur, and short toes.

Soon after the report of Léri's case, four cases were reported by other French surgeons, a sixth case was reported in Liege and a seventh case in London.

The author reports the case of a baby one month old. Physical examination revealed a mongolian face, normal trunk, shortness of all of the limbs, finger tips reaching only to the trochanters, outward rotation of the humeri and femora, limitation of movement of all joints, square hands, limitation of extension of the knees to 160 degrees, valgus, and slight cavus. Roentgenological examination disclosed hypertrophy of the pelvic bones, shortness and enlargement of both ends of the humeri, short and massive hand bones, short femora with internal bowing, short tibiae with external bowing, and enlargement of all epiphyses. This patient was followed for about three years. The treatment consisted in the administration of viosterol and the application of braces to correct deformities. Little improvement resulted. When the patient was thirty-five months old he was still unable to walk, his height was only 74 cm. (that of a child eighteen months old), his weight was that of a child of one year, his feet were badly pronated and abducted, his face still had a mongolian aspect, and there was little improvement in joint function or attempts at walking. All epiphyses had appeared prematurely except those of the metacarpals which came later than normal. Mental development was also retarded. When the child was three years old he was able to speak only a few words.

There is no known treatment. The prognosis for improvement is poor. In the cases of older patients plastic operations on the joints may cause some increase in mobility and function.

WILLIAM ARTHUR CLARK, M.D.

Martin, E., and Sarasin, R. Three Types of Generalized Bone Disease, von Recklinghausen's Fibrocystic Disease, Paget's Osteitis Deformans, and Generalized Osseous Metastases. Their Differential, Roentgenological, Humoral, and Clinical Diagnosis (Trois types de maladies osseuses généralisées, maladie fibrokystique de Recklinghausen, ostéite déformante de Paget et métastases osseuses généralisées. leur diagnostic différentiel, radiologique, humoral et clinique). *Revue médicale de la Suisse Romande*, 1932, 52, 705.

In 1930 one of the authors read a report before the Medical Society of Geneva on the excellent results obtained by extirpation of the diseased parathyroid in fibrocystic disease of the bones. In the literature there are records of twenty-five cases of

fibrocystic disease in which a clinical cure or marked improvement was brought about by operation.

Erdheim demonstrated that the parathyroids are sometimes enlarged in bone diseases such as fibrous osteitis, osteomalacia, and rickets. Hoffmann found that a parathyroid adenoma is associated most frequently with von Recklinghausen's disease. In nearly all cases of this condition operation has revealed a single parathyroid tumor, an adenoma ranging in size from that of a pea to that of a cherry. The findings of experimental studies also seem to demonstrate that parathyroid adenoma is the cause of von Recklinghausen's disease.

Paget's disease or osteitis deformans has a different origin. In this condition there is no parathyroid tumor and the extirpation of one or two parathyroids has no influence on the evolution of the disease. In fibrocystic osteitis the phenomena of histolysis and of osteoclasia are noted. There seems to be a progressive atrophy of the bone. The cortex is thinned and the compact layer shows the development of osteoid tissue and the presence of fibrous tissue. Intra-osseous cysts are present and often contain osteoclasts. In these, spontaneous hemorrhages occur. In Paget's disease or osteitis deformans, on the other hand, there is a double process of osteoclasia and osteoplasia. The compact layer is very much thickened, but the thickening is not due to condensation. The bone looks spongy, the Haversian canals are dilated, the bony structure is disturbed, the bone cells are increased in number, and, as in von Recklinghausen's disease, fibrous tissue is present in abundance. Cysts are exceptional. Nearly always, the skull is involved.

Often, but not always, von Recklinghausen's disease is characterized by intra-osseous cysts which may be taken for osteoclastic metastases. When cysts are absent, the skeletal picture is similar to that of generalized osteoporosis.

The authors report a case of generalized osteoporosis with hypercalcemia which was attributed to a parathyroid adenoma, a case of Paget's osteitis deformans, and a case of cancer generalized in the skeleton.

In the first case the roentgenogram suggested osteomalacia. The only cyst present was a very small one in the foot. The blood calcium was very high, and the general condition became progressively worse. In spite of a negative biopsy, the authors are convinced by the clinical history, the humoral picture, and the roentgenograms that this was a case of parathyroid osteitis.

In the second case the patient was operated upon in 1921 for a cancer of the rectum. Eight years later generalized bone lesions were taken at first for metastases, but after several tests, were proved to be the skeletal changes of Paget's disease.

In the third case the patient was operated on in 1922 for cancer of the breast. Four years later rheumatismal pains developed and were found to be due to generalized osseous metastases. Irradiation therapy was followed by improvement for a few

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Ross, D.: A Method for the Production of Increased Compression Strength of Bones: An Experimental Study. Preliminary Report. *Br. J. Surg.* 33: 32, 337

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ROBERT C. LONGHEAD, M.D.

Rocher, H. L., and Roudil, S.: Excessive Ossification, Left Disease (La pleurostomie, maladie de Left) *Revue chir.* 93: No 4 359.

Multiple premature ossification of the epiphyses resulting in deformity, stiffness, or limitation of

the age of forty. Other myelomata are usually multiple when they are first discovered, whereas endothelial myeloma is usually found while it is still a solitary lesion. Solitary chloromata with little change in the blood picture are difficult to differentiate without biopsy. Also difficult to differentiate are Ewing's sarcoma and osteogenic sarcoma. The latter tumor likewise occurs most frequently in young persons, but is primarily a metaphyseal tumor whereas the endothelial myeloma is diaphyseal.

The lesion most commonly confused with endothelial myeloma is osteomyelitis, especially that of the low-grade, sclerosing type. This is confused with endothelial myeloma clinically, roentgenologically, and sometimes pathologically.

As endothelial myelomata are so markedly radiosensitive, it appears safe and rational to give a therapeutic dose of radium or roentgen-ray irradiation when the diagnosis cannot be made with biopsy. In cases of tumor of the endothelial myeloma class the reaction is both early and marked, whereas in osteomyelitis this is not true and in cases of osteogenic sarcoma roentgen-ray irradiation has no effect.

NORMAN C. BULLOCK, M.D.

Sutherland, C. G., Decker, F. H., and Cilley, E. I.
L. Metastatic Malignant Lesions in Bone
Am. J. Cancer, 1932, xvi, 1457

The authors review 1,032 cases of metastatic malignant lesions in bone. In 393 the metastasis was traced to a primary tumor in the breast. Of these 393 cases, the growths in 375 were graded as osteoclastic, in 5 as mixed osteoclastic and osteoplastic, and in 13 as definitely osteoplastic. The lumbar portion of the spinal column, the pelvic bones, the femora, and the ribs were most frequently involved, but this finding may have been dependent upon the fact that in the authors' section the thorax, kidneys, ureters, and bladder are examined with the roentgen rays routinely whereas other parts are so examined only when definite symptoms call attention to them.

In 296 cases the primary source was a carcinoma of the prostate gland. The bone involvement was predominantly in the spinal column, pelvis, femora, and ribs. This may be explained in part by the fact that few of the patients were seen late in the disease. Metastatic malignant lesions in bone from carcinoma of the prostate gland are predominantly of the osteoplastic type. Of those in the 296 cases reviewed, 277 were osteoplastic, 14 were of a mixed osteoclastic and osteoplastic nature, and 5 were of the osteoclastic form.

Fifty one of the malignant metastatic lesions reviewed were from a primary lesion in the kidneys. Metastatic malignant lesions in bone from primary renal tumors are predominantly of the osteoclastic purely destructive type.

In 9 cases the metastatic lesion was secondary to a primary tumor in the bladder.

The results of an investigation of cases of carcinoma of the testis in which metastatic lesions of

bone were reported were rather unsatisfactory. In 1 of 2 cases the clavicle, and in the other, the scapula was involved. In both, the roentgenological appearance suggested sarcoma as the primary lesion.

In 8 of the cases reviewed the malignant metastatic lesions in the bones had their origin in a lesion in the medulla of the suprarenal gland. In a case of bilateral involvement of the femur there was periosteal proliferation in the distal ends of the bones. Lesions of the ribs and spinal column were part of a general involvement.

Metastatic malignant lesions in bone arising from primary tumors of the thyroid gland were found in 19 cases. In the skull the lesions presented interesting types of osteoclasia. The lesions of the spinal column were all of the osteoclastic variety, and those in the pelvis gave evidence of extensive destruction of bone without evidence of proliferation. The femora and shoulder girdle were included in a general involvement. In 1 case the ribs were included in a general involvement. In another, there was localized destruction of the sixth rib with expansion of the cortex and a surrounding area of pleural involvement.

In 13 cases the metastatic malignant lesions in bone were derived from primary tumors of the lung or bronchus. In all of these the spinal column was involved. The spinal lesions were localized in one vertebra or adjacent vertebrae. In the pelvis the lesions were osteoclastic and limited to parts of the ilium. In the shoulder girdle they were osteoclastic, destroying the acromion and the margin of the glenoid cavity.

Metastatic malignant lesions in bone from primary tumors in the stomach were found in 20 cases. All exhibited increased density of the bone shadow and accentuation of the trabecular elements characteristic of the osteoplastic form.

There were 2 cases in which a carcinoma of the pancreas was found at autopsy. In 1 case there was a metastasis in the lungs and involvement of the ribs was suggested. In the other there was destruction of the ninth thoracic vertebra by a metastasis of the mixed osteoclastic and osteoplastic type.

In 21 cases a clinical diagnosis of inoperable malignant growth in the abdomen was made. These should be included with the group in which the primary growth was not discovered. In the majority, the primary lesion was probably a carcinoma of the liver or pancreas.

In 15 cases the primary tumor was in the colon. In all of these the diagnosis of malignant lesion of the colon was proved. The primary tumors were in the ascending colon, transverse colon, rectosigmoid, and rectum, the incidence increasing in the order in which the parts are named.

All tumors of the squamous-cell type in the jaw, face, and neck produced the osteoclastic form of metastasis. This fact confirms the authors' observations concerning the part played by the degree of malignancy and the rate of growth in determining the type of metastasis.

months, but death ultimately resulted from generalization. PAGE.

Balan, N., and Baillif L.: Discussion of Myeloma (Condérations sur le myélome) *Ann. Chir. Path.*, 1931, IV, 371.

Myelomata are tumors of the bones which are generally circumscribed and are made up of cells originating in the bone marrow itself including white cells and their prototypes, and, in rare cases, nucleated red cells. They do not include sarcomata, endotheliomata, or cancer metastases, which can be differentiated from them very readily by the histological picture.

Myelomata are rare. Most surgeons have reported only one or two cases. Wallgren has been the only one who has been able to examine as many as fourteen myelomata histologically.

Mentioned in the order of decreasing frequency of involvement, the bones of the body most often the sites of myeloma are the bones of the pelvis, the skull, the ribs, the sternum, the spinal column, and the long and short bones of the extremities. The bones are softened and frequently fracture spontaneously. On palpation they feel elastic and give a parchment sound. The nodules may perforate the bone on both sides. The destruction of bone tissue is caused partly by the tumor cells and partly by the osteoclasts. One or several bones may be affected.

In addition to the nodular form, a few cases of an infiltrating form have been described. Occasionally metastases showing the same forms of cells have been found in other organs.

Histological examination shows a delicate reticulated connective tissue stroma containing granules of haemosiderin as well as the characteristic cells.

Myelomata are of various types—lymphocytic, myelocytic, myeloblastic, those made up chiefly of plasma cells, those containing all of the cells of the bone marrow and those made up of only erythroblasts. The only myeloma made up entirely of erythroblasts was reported by Ribbert. The plasma cell form seems to be the most common, particularly in recent years.

The authors report a case of myeloma in a woman forty-six years of age. The first symptom, hemiplegia, developed three years before the patient's admission to the hospital. Two months later a spontaneous fracture occurred in the right humerus. The patient was admitted to the hospital in profound stupor and died three days later of bronchopneumonia. She had palting tumors of the scalp and marked enlargement of the sternum and clavicles. The spinal fluid was clear and showed no increase of albumin or cells. At autopsy the sternum, clavicles and ribs were found to be very fragile. The marrow was a dark brownish red. On microscopic examination the myeloma nodules were found to be made up chiefly of large cells from 12 to 30 micra in diameter which had a basophilic and vacuolated protoplasm and retracted plasma cells. There were also

some larger cells with many nuclei. In some of these the nuclei had united to form a single large, irregular nucleus. In the areas in which the lesions had been present longest, particularly in the nodules in the clavicles, these cells had lost the basophilia of their protoplasm and had become typical *megakaryocytes*. The neoplasm was an infiltrating tumor which, particularly in the sternum, had broken through the periosteum and invaded the surrounding tissues. In the clavicular nodules there were many *megakaryocytes* and numerous cells loaded with eosinophilic granules. ARTHUR GOS. MORSE, M.D.

Clopton, M. R., and Womack, M. A.: The Diagnosis of Diffuse Endothelial Myeloma (Ewing's Sarcoma). *Am. J. Cancer* 1931, xvi, 1444.

In 1923 Ewing differentiated diffuse endothelial myeloma as a clinical entity. An early symptom is pain. This usually begins soon after a mild trauma and is intermittent. It lasts for a short time and may then subside completely. However it soon recurs and is then more severe. Eventually it becomes constant. This series of events may continue for a few months or a year or more. When the patient first consults a physician, examination usually reveals a transfection around the shaft of the bone. A moderate edema may be present in the deeper tissues, but the skin is rarely involved either by attachment or redness. X-ray examination at this time usually shows a fusiform enlargement of the shaft due to periosteal proliferation and central bone destruction. Quits often the new bone is laid down in concentric longitudinal layers. The arborization so often seen in osteogenic tumors is usually absent. The systemic reactions are a low grade fever and a moderate leucocytosis. Anemia may or may not be present. In the early course of the condition there is generally no loss of weight.

Ewing characterized diffuse endothelial myeloma as a tumor developing in the marrow or the bone or both. The shaft is widened and slowly absorbed without a trace of bone production. The soft tissues are gradually invaded. The structure presents diffuse sheets of polyhedral cells with a clear cytoplasm and without intervening stroma, which are often undergoing pinocoid or hydropic degeneration. The tissue is remarkably susceptible to roentgen and radium irradiation.

Diffuse endothelial myeloma is not extremely rare almost 100 cases having been recorded in the Bone Registry of the American College of Surgeons among approximately 1,000 cases of bone sarcoma. At the Washington University School of Medicine the authors have records of 5 cases which unquestionably belong to this group and 3 possible cases. In the same period of time 63 cases of osteogenic sarcoma were recorded. The authors report the 5 unquestionable cases in detail with roentgenograms and photomicrographs.

Endothelial myeloma usually occurs in children or young adults and is rare after the age of thirty years. Other myelomata are generally found after

such as syphilis and tuberculosis, and osteochondritis dissecans. No cause is known. The disease seems to develop in an otherwise normal joint.

The author reports five cases. His first case was that of a man of thirty-eight years who had numerous loose bodies in the elbow which caused slight limitation of motion. Removal of the loose bodies through a posterior incision was followed by rapid improvement. The second case was that of a man of forty-one years, with partial ankylosis of the elbow, weakness of the hand, and flexion contracture of the last two fingers. Roentgen-ray examination showed osteoporosis and a large number of loose bodies in the elbow joint. In the three other cases the same characteristic shadows and limitation of function were found respectively in an elbow, a knee, and a shoulder.

In only one of these cases was there a history of trauma, and in only one a previous syphilitic infection. Henderson believes that the loose bodies are neoplasms from the synovial membrane, and that when they are removed the synovial membrane should be resected to prevent recurrence.

Irradiation has been suggested for treatment, but the author believes it is of value only as a post-operative procedure to prevent recurrence.

WILLIAM ARTHUR CLARE, M.D.

Key, J. A. Clinical Observations on Tabetic Arthropathies (Charcot Joints). *Am J Syphilis*, 1932, xvi, 429.

The author discusses the clinical picture, diagnosis, and treatment of tabetic arthropathies. In a review of statistics he found that arthropathies occur in from 4 to 10 per cent of cases of tabes and in about 25 per cent of cases of syringomyelia. They are rare before the age of forty years. Mentioned in order of decreasing frequency of involvement the joints most commonly affected are the knee, foot and ankle, hip, vertebrae, elbow, shoulder, and wrist.

In a typical case, the arthropathy begins as a sudden spontaneous swelling of the joint and is not preceded by injury or pain. In the knee, ankle, and foot, swelling is the prominent feature, but in the hip a pathological fracture of the neck of the femur is frequently the first sign, and in involvement of the spine the patient may not be aware of the condition until a deformity appears.

In Key's series of cases there was none in which the diagnosis of neurosyphilis could not be made from the physical and laboratory examinations. The most prominent symptoms suggesting neurosyphilis were shooting pains in the extremities, ataxia, bladder dysfunction, visceral crises, optic atrophy, disturbances of sensation in the lower extremities, and impotency.

Key states that tabetics in whom the lower cord symptoms are marked will be more liable to develop Charcot joint than those in whom the symptoms are referable to the upper cord.

The roentgenogram changes in Charcot disease of joints include swelling and increased density of

the soft tissues, excess fluid in the joints, erosion of the bearing surfaces, new bone production, pathological fracture, loose bodies, calcification in the periarthritic tissues, and subluxations and dislocations of the articular surfaces.

In the differential diagnosis it is necessary to rule out hypertrophic arthritis, traumatic arthritis, atrophic and infectious arthritis, tuberculous arthritis, gonorrhoeal arthritis, pyogenic infections, and neoplasms.

In the treatment of tabetic arthropathies it is important to treat the underlying neurosyphilis in an aggressive and intelligent manner and to treat the ataxia by muscle re-education. Key believes that antisyphilitic treatment has no effect upon the progress of a Charcot joint which has already developed and cannot prevent the development of such a joint.

As local treatment he recommends immobilization in splints or a plaster-of-Paris cast which can be removed for physical therapy, and the local use of heat in the form of fomentations, infra-red light, baking, or diathermy. Non-weight-bearing exercises and aspiration of the joint are indicated in order to prevent undue stretching of the capsule and ligaments.

In the cases of vigorous patients with a life expectancy of several years the author recommends operation. For the spine he recommends a fusion operation, for the hip, intra-articular and extra-articular arthrodesis, the knee, arthrodesis or amputation, for the ankle, osteotomy, and for serious foot conditions, amputation.

He states that in the cases of tabetic patients fractures should be treated in the same way as fractures in non-tabetic patients, and when the proper treatment is given the bones can be expected to heal in about the same period of time.

PHILIP LEWIN, M.D.

Cooperman, M. B. Chronic Tuberculous Polyarthritides. *Ann Surg*, 1932, xcvi, 1065.

The author states that many cases suggesting arthritis deformans, atrophic arthritis, and rheumatoid arthritis are in reality cases of tuberculous processes. Suspicion of their tuberculous nature should be aroused if the history points toward a tuberculous background and physical and roentgen-ray examinations of the chest reveal tuberculosis. Like the von Pirquet and Mantoux skin tests, roentgen-ray examinations may be of little diagnostic aid.

In cases of chronic arthritis and other forms of systemic tuberculosis, Reitter and Lowenstein have recently been able to isolate the tubercle bacilli from the blood stream by means of a special culture medium. This will prove a distinct advance if it is confirmed by others. Until then, reliance must be placed solely on tissue study. The author urges that more patients suffering from chronic arthritis be subjected to arthrotomies to clear up the diagnosis.

PHILIP LEWIN, M.D.

In 3 cases of small osteoclastic lesions in the frontal bone and 1 case of erosion of the sella. Biopsy showed the primary lesion to be a melano-epithelioma. In a case of clinical melano-epithelioma of the foot, osteoclastic destruction of the ninth thoracic vertebra was seen.

There were 27 metastatic malignant lesions in bone from primary tumors of the cervix or ovary.

A number of miscellaneous lesions were also observed.

The majority of these observations were based on the interpretation of roentgenograms before any thing was known of the history. Correlation of roentgenographic, clinical, surgical, and other observations was done subsequently.

Garnax, L.: Synovial Osteochondromatosis (*L'ostéochondromatose synoviale*) *Arch. franco-belge de chir.* 1931-32 xxviii, 477

This article is a report of 3 cases of synovial osteochondromatosis observed by the author and a review of 123 cases collected from the literature. It has a 7-page bibliography.

The first case reported by the author was that of a man thirty-three years of age who sought treatment for pain in the elbow which began three years previously without injury. The joint was somewhat swollen and its motion was limited. Several small, hard, movable bodies were felt posteriorly on extension. The Wassermann test was positive. Roentgen-ray examination disclosed numerous shadows of loose bodies distributed mostly around the lower end of the humerus. At operation 36 cartilage-covered bodies were removed through a transolecranon incision. Histological examination showed them to consist of a core composed of connective and hyalin tissue in a thin bone capsule with a cartilaginous surface. Some of them had a more or less lamellar structure. The function of the elbow was much improved by the operation. Although a few small bodies were not removed, examination a year later showed that they had not enlarged and were causing no trouble.

The author's second case was that of a man thirty-nine years of age who first noticed aching and disability in the left elbow following a fall in 1916. He served in the army throughout the war and later worked as a butcher. In 1919 the left hand began to become numb and cold. In 1926, occasional locking in the elbow was first noticed. Examination now shows motion of from 65 to 150 degrees. Several small, hard movable bodies can be felt in the posterior aspect of the joint. The left hand is somewhat cyanotic and is colder and weaker than the right. The left radial artery is not perceptible. Roentgen-ray examination shows about 30 loose bodies, most of which are in front of the condyles. The patient refuses operation.

The author's third case was that of a man twenty-two years of age who sought treatment for fluctuant swelling and limitation of motion of the proximal joint of the middle finger which followed an injury

Roentgen-ray examination two years after the injury revealed many loose bodies. Removal of the loose bodies with resection of the synovial membrane was followed by complete recovery.

Loose bodies in joints were reported by Brodie in 1836, Foucher in 1854, and Paves in 1861. The first case is believed to have been described by Park.

Synovial osteochondromatosis occurs most frequently in the elbow and next most frequently in the knee. These joints were involved in 103 of the 123 cases reviewed. Hundreds of loose bodies may be present in a joint. The largest number, 1,300, was removed from an elbow. The synovial membrane is often thickened and congested. The bodies are composed of phosphate and carbonate of calcium with traces of cholesterol.

Eighty-eight of the 123 patients whose cases were collected from the literature were between twenty and fifty years of age. Only 4 were over seventy and only 3 were under twenty. About 78 per cent were males. In the majority of the cases there was a history of trauma.

The loose bodies have been attributed to infection, trauma, embryological factors, neoplastic processes, and arthritis. The author finds nothing to support the theory that they are due to infection, but believes that trauma, especially repeated lacerations of an irritating nature, may be a factor in their formation. Some observers regard them as neoplasms arising from the synovial membrane, possibly from the tissue of mesenchymal origin at the margins of the synovial membrane. The theory ascribing them to arthritis is based on the finding of necrotic areas in the bone near the cartilage, from which small fragments break off.

In most cases there is progressive disability. In cases in which the elbow is involved there are sometimes complications from involvement of the nerve trunks. With the aid of the roentgen ray the diagnosis is usually not difficult. Loose bodies formed in tuberculosis are much smaller than those of osteochondromatosis. Tertiary syphilis and syngonism must also be ruled out. Osteochondritis dissecans may produce a small number of loose bodies, but usually the roentgenogram will show the points of origin.

Loose bodies are best removed from the elbow through the posterior transolecranon incision. An anterior incision is justified only for the removal of loose bodies which are inaccessible by the posterior route. Loose bodies in the knee are best approached by splitting the patella, a procedure which gives access to all parts of the joint.

WILLIAM ARTHUR CLARK, M.D.

Wells, J. Articular Osteochondromatosis (*L'ostéochondromatose articulaire*) *Arch. franco-belge de chir.* 93 93 viii, 53

Articular osteochondromatosis (Henderson-Jones disease) is regarded as a distinct clinical entity differing from conditions associated with loose bodies produced by trauma, generalized disease

such as syphilis and tuberculosis, and osteochondritis dissecans. No cause is known. The disease seems to develop in an otherwise normal joint.

The author reports five cases. His first case was that of a man of thirty-eight years who had numerous loose bodies in the elbow which caused slight limitation of motion. Removal of the loose bodies through a posterior incision was followed by rapid improvement. The second case was that of a man of forty-one years, with partial ankylosis of the elbow, weakness of the hand, and flexion contracture of the last two fingers. Roentgen-ray examination showed osteoporosis and a large number of loose bodies in the elbow joint. In the three other cases the same characteristic shadows and limitation of function were found respectively in an elbow, a knee, and a shoulder.

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In a typical case, the arthropathy begins as a sudden spontaneous swelling of the joint and is not preceded by injury or pain. In the knee, ankle, and foot, swelling is the prominent feature, but in the hip a pathological fracture of the neck of the femur is frequently the first sign, and in involvement of the spine the patient may not be aware of the condition until a deformity appears.

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In the cases of vigorous patients with a life expectancy of several years the author recommends operation. For the spine he recommends a fusion operation, for the hip, intra-articular and extra-articular arthrodesis, the knee, arthrodesis or amputation, for the ankle, osteotomy, and for serious foot conditions, amputation.

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PHILIP LEWIN, M.D.

Cooperman, M. B. Chronic Tuberculous Poly-arthritis. *Ann Surg*, 1932, LXVI, 1065.

The author states that many cases suggesting arthritis deformans, atrophic arthritis, and rheumatoid arthritis are in reality cases of tuberculous processes. Suspicion of their tuberculous nature should be aroused if the history points toward a tuberculous background and physical and roentgen-ray examinations of the chest reveal tuberculosis. Like the von Pirquet and Mantoux skin tests, roentgen-ray examinations may be of little diagnostic aid.

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PHILIP LEWIN, M.D.

Knappe, R. L.: A Report on the Strangeways Col-
lection of Rheumatoid Joints in the Museum
of the Royal College of Surgeons. Part II
Brit. J. Surg. 93 xi, 309.

The author discusses osteo-arthritis and rheuma-
toid arthritis. In the discussion of the former he
takes up the histology of osteophytes and the de-
generative changes in sclerosed and eroded bone.

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that the pathological process which is especially to
be identified with this condition is a degeneration
in which both articular cartilage and bone are re-
placed by fibrous tissue. He discusses the origin
of giant cells associated with bone and describes
the pneumococcal, syphilitic, and gonorrheal forms
of rheumatic arthritis.

The article is illustrated by excellent photo-
micrographs. FREDERICK LEWIS, M.D.

Maisart, R.: Chronic Sacro-Iliac Arthritis; Treat-
ment by Arthrodesis (Les arthrites chroniques
sacro-iliaques, leur traitement par l'arthrodesis)
Bull et mem Soc. d'orthopédie de Paris 93
xiv 458.

Disturbances in the sacro iliac articulation due
to arthritis are of two types: (1) pain which is often
confused with sciatica, increases with age, and pre-
vents the patient from standing or even sitting up-
right, and (2) dis-equilibrium of the spine, giving a
peculiar character to the gait suggestive of con-
genital dislocation of the hip.

Such chronic arthritis is much more common in
women than in men. In the female it is due to
articular changes occurring during pregnancy or
labor as the result of the distention of the articula-
tions of the pelvis. However pregnancy and labor
are only determining causes which increase the
articular mobility for in all women with the con-
dition examination reveals exaggerated decalcifica-
tion and disturbances of the general health. Some-
times such an arthritis which has been well tolerated
for years becomes aggravated during the meno-
pause.

In all of the cases there is an abnormal mobility
of the sacrum from behind forward. A study of
this abnormal mobility which ranges from exag-
gerated laxity of the ligaments to erosions of the
osseous surfaces, led the author to the conclusion
that the best treatment is arthrodesis. The normal
movements of the sacro-iliac joint may readily be
sacrificed, especially in women who have no prospect
of bearing children and in men. It is better to have
a solid sacrum capable of receiving and transmitting
forces applied to it than to have an arthritis ag-
gravated by abnormal mobility. The author ad-
vocates a simple and rapid operation which he has
used to immobilize the tuberculous sacro-iliac joint.
It is not a serious operation as it does not touch
a vital organ, it is performed in a region free from
important vessels and nerves, and it is followed by
rapid healing with the patient in ventral decubitus
without the use of plaster. The use of a living extra-

articular graft to unite the mobile sacrum to the
iliac bones is superior to the use of the iliac
articular graft of Tuffier as it produces a more
stable fixation.

In the technique described the sacrum and both
sacro-iliac joints are exposed through an appropriate
incision and the spine of the first sacral vertebra
and both external iliac fossae are exposed through
their aponeurotic coverings. An original departure
is made at this point. The bed for the graft is made
with an awl with a diameter equal to the spacing
between the blades of the double rotor saw used to
cut the graft. A snug fit is thus insured. The
awgur introduced from the side, perforates one iliac
bone, the spinous crest, and then the other iliac
bone. It is then left in place. When the graft is
cut from the tibia it is forced into the hole made
by the awgur with a mallet as the awgur is with-
drawn. It thus acts as a bolt traversing the iliac
bones and the sacrum in a manner similar to that
recommended by Verriell.

Three women in whom abnormal mobility at the
sacro-iliac joint was demonstrated to be the cause of
pain and disability were operated upon in the man-
ner described with complete relief of all symptoms.
GAYLORD S. BATES, M.D.

Kernot, H.: Gonitis of Uncertain Cause, Especially
Simple Chronic Synovitis. With Special Refer-
ence to the Tuberculous Rheumatism of Poinet and
Causes of Synovitis With Definite Spotty Atrophy
(Ueber Gonitis incerta causa tuberculosa Syno-
vitis chronica "simplex", unter besonderer Berück-
sichtigung des Rheumatismus tuberculoso-Poinet
und Leiden von Synovitis mit ausgesprochener
fleckiger Atrophie) *Acta orthop. Scand* 193 10,
97.

In the course of twenty years 340 cases of chronic
gonitis were treated at the Mäditrans Hospital in
Stavrum. Of these 215 (55 per cent) were non-
tuberculous. Fifty-six and one-half per cent (61)
of the non tuberculous cases and 19.7 per cent of all
cases admitted were of uncertain origin. Clinically
such cases may assume any of the forms assumed by
acute or chronic tuberculous or syphilitic synovitis,
arthritis deformans, or osteomyelitis. In some of
them even abscesses or fistulae may develop. The
author cites a case in which there was no suggestion
of tuberculous although bacteria were found. The
condition was assumed to be a mild septic infection.
In another case a resection was done and a beginning
arthritis deformans was found. The great majority
of the cases ran their course with the picture of
chronic synovitis of the hydropic or fungous type.
The sedimentation of the erythrocytes may be
normal, but its rapidity is usually increased.

In 22 cases (6 those of children) the condition was
bilateral. Without doubt there is an indolent form
of bilateral hydrops which has no relation to
syphilis. Half of the patients gave a history of
trauma. In none of the 35 cases treated surgically
could tuberculous be demonstrated. The synovial
membranes in these cases showed changes ranging

from very slight alterations to villous masses resembling the comb of a rooster. It is impossible to distinguish between tuberculous and non-tuberculous synovitis with certainty by macroscopic examination. It is noteworthy that both bone and cartilage may be involved and the condition may terminate in arthritis deformans. In a few of the cases reviewed the joint affection was complicated by pleurisy and erythema exudativum multiforme.

The author discusses the question of the relationship of a series of these cases of gonitis of uncertain causation to the tuberculous rheumatism described by Poncet. In 1 case, operation revealed tuberculosis in one knee and a simple synovitis in the other. In many cases several joints were involved. The author discusses the etiological importance of tuberculosis as related to tuberculosis of other organs, a positive tuberculin test, healed previous involvement of the cervical glands, and enlargement of the hilar glands.

In 52 of the cases reviewed endocrine disturbances were found. Thirty-six of the patients with such disturbances were women.

Attention is called to the frequent occurrence of a spotty atrophy of the bone in the condition under discussion. This atrophy is shown in a number of roentgenograms. It has no very characteristic features which are of aid in the diagnosis.

The last case cited by the author was an unusual case of joint-mouse formation in which the nature of the condition was not recognized until after the lapse of some time.

In 11 of the 35 cases treated surgically a total synovectomy was done, and in 24 a partial synovectomy was performed. Both operations gave very good results. In many cases good results were obtained by conservative treatment. Roentgen treatment sometimes gave astonishingly good results and sometimes was unsuccessful. When conservative measures fail, operation is indicated. In bilateral cases one side should be operated upon at a time. Foci of infection should be sought and, if possible, removed.

BURCKHARDT (Z)

Tixier, L., and De Rougemont, J. The Relative Importance of the Crucial Ligaments (Sur la relativité du rôle des ligaments croisés). *Rev de chir*, Par, 1932, li, 589.

The authors conclude that the rôle of the crucial ligaments in stabilizing the knee joint has been overestimated. In support of this conclusion they cite the case of a fifteen-year old girl who ruptured the anterior crucial ligament and, although the ligament was not sutured at operation, was able to walk without pain, limp, or any sign of laxity of the knee joint one month after the operation. Several other surgeons have reported similar cases. Moreover, there are records of cases in which, at arthroscopy performed a long time after the injury, one crucial ligament, usually the anterior, was found atrophied or completely gone, but the stability of the knee was not impaired.

In the authors' opinion the operation of Hex-Groves, in which a tendon or fascia is transplanted to take the place of a ruptured crucial ligament, is of value only if the lateral ligaments, both internal and external, are strengthened by plication. In fact, the lateral ligaments have a great deal more to do with the strength of the joint than the crucial ligaments. The authors cite cases of complete disability of the knee from rupture of the internal lateral ligament although the crucial ligaments are intact.

Laxity of the joint observed two months or more after an injury may be due to hypertonicity rather than rupture of the ligaments. In such cases it is impossible to make a diagnosis of the condition of the crucial ligaments, but easy to demonstrate relaxation of the lateral ligaments.

WILLIAM APTHUR CLARE, M D

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Whitman, A. Surgical Possibilities in the Treatment of Anterior Poliomyelitis. *Ann Surg*, 1932, xcvi, 1049.

In no branch of orthopedic surgery are the recent developments more spectacular than in the treatment of chronic anterior poliomyelitis. From the ideal standpoint, orthopedic treatment in this condition should begin as soon as the diagnosis is made and should be continued throughout the patient's life. Practically, it usually begins when the acute symptoms have subsided. Its aims are (1) the prevention of deformity, (2) the maintenance of muscular tone, and (3) maximum utilization of the remaining muscular power by muscle transplantation and skeletal stabilization.

The disease is arbitrarily divided into three stages: the acute, the convalescent, and the chronic. In the acute stage the treatment should consist of measures for the prevention of deformity and immobilization of the affected part. When the affected limbs are placed in plaster of Paris the impulses passing through them and irritating the inflamed area in the spinal cord are reduced to the minimum and the limbs are protected against deformity. The author states that one of the strongest impressions left in his mind by the epidemic of 1916 was that the worst cases and the cases in which tenderness persisted longest were those in which active treatment had been instituted too early. Most orthopedic surgeons believe that after the acute stage has passed the period of potential recovery is two years, and that during this period no operative treatment should be undertaken.

Deformity may be produced by (1) the force of gravity, (2) the unopposed action of active muscles, (3) habitual posture, and (4) functional use. The most frequent example of deformity due to the force of gravity is toe-drop caused by the patient's attitude in bed plus the weight of the bed clothes. Flexion deformity at the hip is produced by the un-

Kneegs, R. L.: A Report on the Strangeways Collection of Rheumatoid Joints in the Museum of the Royal College of Surgeons. Part II. *Brit. J. Surg.* 1934, 22, 300.

The author discusses osteo-arthritis and rheumatoid arthritis. In the discussion of the former he takes up the histology of osteophytes and the degenerative changes in sclerosed and eburnated bone.

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The article is illustrated by excellent photomicrographs. FRANK LAWLER, M.D.

Mismart, R.: Chronic Sacro-Iliac Arthritis Treatment by Arthrodesis (Les arthrites chroniques sacro-iliaques, leur traitement par l'arthrodesis). *Bull. et mem. Soc. d'orthopedie de Par.* 1933, 207, 458.

Disturbances in the sacro-iliac articulation due to arthritis are of two types (1) pain which is often confused with sciatica, increases with age, and prevents the patient from standing or even sitting upright, and (2) disquietude of the spine giving a peculiar character to the gait suggestive of congenital dislocation of the hip.

Such chronic arthritis is much more common in women than in men. In the female it is due to articular changes occurring during pregnancy or labor as the result of the distention of the articulations of the pelvis. However pregnancy and labor are only determining causes which increase the articular mobility for in all women with the condition examination reveals exaggerated decalcification and disturbances of the general health. Some times such an arthritis which has been well tolerated for years becomes aggravated during the menopause.

In all of the cases there is an abnormal mobility of the sacrum from behind forward. A study of this abnormal mobility which ranges from exaggerated laxity of the ligaments to erosions of the osseous surfaces, led the author to the conclusion that the best treatment is arthrodesis. The normal movements of the sacro-iliac joint may readily be sacrificed, especially in women who have no prospect of bearing children and in men. It is better to have a solid sacrum capable of receiving and transmitting forces applied to it than to have an arthritis aggravated by abnormal mobility. The author advocates a simple and rapid operation which he has used to immobilize the tuberculous sacro-iliac joint. It is not a serious operation as it does not touch a vital organ, it is performed in a region free from important vessels and nerves, and it is followed by rapid healing with the patient in ventral decubitus without the use of plaster. The use of a living extra-

articular graft to unite the mobile sacrum to the iliac bones is superior to the use of the laminar articular graft of Tuffier as it produces a more stable fixation.

In the technique described the sacrum and both sacro-iliac joints are exposed through an appropriate incision and the spine of the first sacral vertebra and both external iliac fossae are exposed through their aponeurotic coverings. An original departure is made at this point. The bed for the graft is made with an augur with a diameter equal to the spacing between the blades of the double rotor saw used to cut the graft. A saw fit is then inserted. The augur introduced from the side perforates one iliac bone the spinous crest, and then the other iliac bone. It is then left in place. When the graft is cut from the tibia it is forced into the hole made by the augur with a mallet as the augur is withdrawn. It thus acts as a bolt transfixing the iliac bones and the sacrum in a manner similar to that recommended by Verrill.

Three women in whom abnormal mobility at the sacro-iliac joint was demonstrated to be the cause of pain and disability were operated upon in the manner described with complete relief of all symptoms. GAYLORD S. BATES, M.D.

Sundt, H.: Gonitis of Uncertain Cause, Especially Simple Chronic Synovitis. With Special regard to the Tuberculous Rheumatism of Pott and Cases of Synovitis With Diffuse Sperry Atrophy (Ueber Gonitis incerta causae insbesondere Synovitis chronica "atrophica", unter besonderer Berücksichtigung des Rheumatismus tuberculös-Pott und Fäulen von Synovitis mit atrophischer Beckinger Atrophie). *Acta orthop. Scand.* 1934, 5, 97.

In the course of twenty years 340 cases of chronic gonitis were treated at the Karolinska Hospital in Slavern. Of these, 15 (35 per cent) were non-tuberculous. Fifty-six and one-half per cent (63) of the non-tuberculous cases and 19.7 per cent of all cases admitted were of uncertain origin. Clinically such cases may assume any of the forms assumed by acute or chronic tuberculous or syphilitic synovitis, arthritis deformans, or osteoarthritis. In some of them even abscesses or fistulae may develop. The author cites a case in which there was no suggestion of tuberculous although bacteria were found. The condition was assumed to be a mild septic infection. In another case resection was done and a beginning arthritis deformans was found. The great majority of the cases ran their course with the picture of chronic synovitis of the hydropic or fungous type. The sedimentation of the erythrocytes may be normal, but its rapidity is usually increased.

In 2 cases (6 those of children) the condition was bilateral. Without doubt there is an indolent form of bilateral hydrops which has no relation to syphilis. Half of the patients gave a history of trauma. In none of the 55 cases treated surgically could tuberculous be demonstrated. The synovial membranes in these cases showed changes ranging

tibia constitutes a technically simple and reliable method of treatment ROBERT C. LONERGAN, M.D.

Cyriax, J. H. A Survey of the Treatment of Tuberculosis of the Knee Joint *J. Bone & Joint Surg.*, 1932, **xx**, 847

The author states that there is no unanimity of opinion in regard to the treatment of tuberculosis of the knee. He reviews all cases of this condition which were treated at St. Thomas' Hospital, London, and the Orthopedic Hospital for Children at Pyrford, England, during the period from 1920 to 1930. In the cases in which the roentgenogram showed local as opposed to general rarefaction of bone, the presence of a primary osseous focus was assured, whereas in the others the primary focus was believed to be in the synovial membrane. Of seventy-eight cases, a diagnosis of primary synovial infection was made in sixty-eight, and in sixteen of these the diagnosis was proved.

As it seems impossible to be certain of the diagnosis of tuberculosis of the knee joint, Cyriax suggests that synovectomy be carried out on all patients over nine years of age as soon as the diagnosis of chronic arthritis is established unless the roentgenogram gives evidence of a bony lesion.

For proved tuberculosis of the knee joint he recommends immediate arthrodesis in the cases of patients fifteen years of age or older except in the very earliest cases. When roentgenographic evidence of destruction of cartilage is present, arthrodesis is indicated in the cases of patients over nine years of age. Before the age of six years it is to be condemned.

PHILIP LEWIN, M.D.

Laewen, A. The Question of Synovectomy in Chronic Non-Specific Affections of the Knee (Zur Frage der Synovektomie bei chronischen unspezifischen Kniegelenkserkrankungen) *Beitr. z. klin. Chir.*, 1932, **clvi**, 153

By synovectomy is meant the removal of parts of the synovial membrane. The fibrous capsule is left undisturbed. A total synovectomy of the knee joint is technically almost impossible. A synovectomy of the anterior part of the knee joint is distinguished from a synovectomy of the posterior part. Various methods for gaining access to the interior of the joint have been proposed. Among them is Pavr's median S-shaped incision, to which a lateral incision may be added when the condition to be attacked is extensive. The author employs the following technique: A trap-door or half-moon incision is made over the knee joint with the base of the flap thus produced directed posteriorly. After the skin has been dissected back and the retinaculum patellæ on either side has been cut, the exposed synovial membrane is incised and freed as extensively as possible from the fibrous capsule and removed. The fibrous capsule is then sutured over the defect with silk or catgut.

It is generally agreed that synovectomy is indicated in only a very small number of the multitude

of chronic non-specific knee affections coming to treatment. It is indicated for tumors of the capsule, villous hypertrophy, lipoma arthrosens, and osteochondromatosis. In the usual chronic dry or exudative non-specific synovitis, infectious synovitis, the sequelæ of articular rheumatism, and the synovitis of arthritis deformans the determination of the indications is more difficult. In the affections first mentioned the operation is indicated only after all other measures have failed and their failure has been proved by a sufficient period of observation. In this connection the author calls attention to his method of arthrotomy from within the joint with the formation of a window, a method by which considerable improvement can be obtained even in severe cases. In arthritis deformans, operative removal of the synovial membrane can be of value only in cases in which the usual conservative and hydrotherapeutic measures have failed. In such cases it will not have any influence on the essential pathological changes in the cartilage or its border excrescences, but will alleviate the severe pains due to the synovitis. Thus in these cases it is to be classed merely as a symptomatic measure.

BODE (Z)

FRACTURES AND DISLOCATIONS

Grauer, R. C. The Effect of Viosterol on the Periosteum in Experimental Fractures *Arch. Surg.*, 1932, **xxv**, 1035

In experiments on guinea pigs with fractures Grauer studied the changes occurring in the calcium, inorganic phosphorus, and protein values of the blood serum following the administration of graded doses of viosterol ranging from 0.75 to 15 mgm daily. Microscopic examinations were made of a fractured radius, the costochondral junction, the ribs, the aorta, the heart, the lungs, and the bronchi. No calcareous deposits were found in the soft tissues, but when high doses of viosterol were given renal and myocardial damage was evident. When a dose of 1 mgm was given the calcium content of the blood rose about 10 per cent while the protein and phosphorus remained fairly constant. When 2 mgm and more were given there was a proportionate increase in the phosphorus and protein content of the serum. In all of the animals the serum calcium showed a primary rise during the early days of the administration of the viosterol until a maximum was reached and then a gradual fall. As the doses of viosterol were increased, toxic manifestations became apparent.

The animals given 2 mgm of viosterol or less showed a consistent stimulation of the osteogenic layer of the periosteum. When larger doses were given osteogenesis was retarded and the outer fibrous layer was stimulated. In the animals given 15 mgm of viosterol there was no tendency toward bone formation at the fracture site and the picture was that of a true osteitis fibrosa.

The author draws the following conclusions:

opposed action of the tensor fasciae femoris muscle, which is almost never completely paralyzed. The bilateral posture, such as prolonged sitting by a completely paralyzed patient, is in itself sufficient to cause flexion contractions at the hips and the knees. Deformity due to functional use is seen when a patient with a weakened back or abdominal muscles sits up unsupported and develops curvature of the spine.

One of the difficult questions to answer is when to let the patient get up. Although the author recognizes the great danger of fatigue, he believes that prolonged inactivity is depressing and that therefore locomotion, even though accomplished with crutches and braces, is of tremendous psychological value.

With regard to the active treatment during the two-year period of potential recovery, Whitman states that the muscles must be kept in the best possible condition in anticipation of the possible return of nerve power and that the most logical form of treatment is exercises in the water. He emphasizes that the patient must not be sacrificed to his disease and the family must not be sacrificed to the patient.

With regard to the third stage of the disease, Whitman says that the sooner the situation is faced and the necessary adjustment is made to it the better for all concerned.

Attention is called to the marked difference between paralysis of the lower extremities and paralysis of the upper extremities. The return of power to the toes, while encouraging, is of no practical importance whereas the return of even slight power in the fingers or thumb may render a useless hand useful.

The purposes of operative treatment should be to make effective use of whatever muscular power remains and by various forms of stiffening procedures to substitute stiff but trustworthy joints for movable but unstable joints. As it is rare for all of the shoulder muscles to be paralyzed, the humerus may be fixed to the scapula so that the arm may be moved with the shoulder. A useful degree of motion in the fingers and thumb may be obtained by various muscle transplantations.

Paralysis of the muscles of the abdomen or back will result in curvature of the spine. Deformity is inevitable. Accordingly there is no good reason for delaying fusion of the spine after the two-year period. The fusion operation is difficult and severe and should not be completed in one stage. As the patient is not a good risk, it is better to do too little than too much.

The deformities of the lower extremities are flexion contractions of the hips and knees, knock-knees, and deformities of the feet. They may all be relieved by fairly well standardized operative procedures. The author has never performed a fusion of the knees a foot having his patient wear a cast for a month or two to see how he will be able to get along with a stiff leg. As a result, he has done the operation for flat knees only twice. An astraglectomy and backward displacement of the foot performed so

that the dorsal flexion of the foot is checked at a right angle will lock the knee in extension and in many cases will render a brace unnecessary.

In favorable cases, surgical treatment may entirely mask the effects of the disease. In less favorable cases it may enable the patient to discard apparatus. In the worst cases it may hold out the possibility of independent locomotion. The public should know that only a small percentage of persons who contract anterior poliomyelitis become paralyzed, and of those who develop paralysis a large percentage will get well.

ROBERT C. LONDON, M.D.

Campbell, W. C., and Mitchell, J. L.: The Operative Treatment of Paralytic Genu Recurvatum. *Ann. Surg.* 93, 1931, 1-55.

Paralytic genu recurvatum or exaggerated hyperextension of the knee may develop following acute anterior poliomyelitis when the hamstring muscles and the gastrocnemius muscle are paralyzed and the quadriceps muscle is active. It may result also from a compensatory effort to fix the knee when all of the muscles of the thigh and leg are paralyzed. In the operation described by the authors the lower end of the patella is united to the anterior aspect of the tibia, the upper two-thirds of the patella being left free to articulate with the femoral condyles when the knee is extended. This procedure forms a stop-joint which prevents hyperextension of the knee in the same manner as the olecranon process of the ulna blocks hyperextension of the elbow.

A linear incision 5 or 6 in. long is made over the patella and patellar ligament and the skin and superficial tissues are retracted. The quadriceps tendon is then divided above the patella by a Z-shaped incision. The capsule of the knee joint on either side of the patella is incised and the patella retracted downward to expose the interior of the joint. The ligamentum mucosum is divided and a portion of the infrapatellar fat pad excised. The cartilage covering the lower one-third of the patella is removed to the spongy bone. The patellar tendon and the periosteum are stripped from the anterior surface of the patella for a distance of from 3/4 to 1 in. A cavity is then made on the upper anterior aspect of the tibia by driving an osteotome vertically downward and prying forward the portion of the tibia anterior to the chisel. The patella is inserted into the depression on the tibia thus made and the periosteum of the patella is sutured to the periosteum of the tibia about the margin of the cavity. The quadriceps tendon is re-anastomosed in neutral tension, the joint capsule sutured, and the wound closed in layers. A cast is then applied to hold the knee in flexion of 100 degrees. After eight weeks a brace with a stop joint at the knee is applied to be worn until roentgenograms show complete bony fusion.

The authors report seven cases in which this procedure was used. They conclude that in selected cases the operation of fusion of the patella to the

They report nine cases and supplement the reports with roentgenograms. They differentiate between dislocations caused by coxalgia and those caused by other acute processes. In their material there were more of the latter than of the former type. Lesions of the soft parts predominate in these simple dislocations. The non-tuberculous forms originate chiefly from acute osteomyelitis in the region of the hip joint, but may be caused also by acute arthritis developing in the course of an infectious disease.

In two of their cases the authors performed arthrotomy. In one of these there was no joint exudate, but granulations and a laceration of the round ligament were found. In the other, the operation disclosed pus in the joint and laxity of the round ligament. Many surgeons believe that granulations play the chief part in the development of such dislocations by the elastic force which they exert on the head of the femur. The two cases in which the authors performed arthrotomies do not support this theory. In the authors' opinion the chief factors are destruction or relaxation of the round ligament associated with distention of the capsule and relaxation of the fibrocartilage of the joint, phenomena which are common to all forms of arthritis.

The diagnosis is based chiefly on the roentgenogram. The clinical symptoms are the same as those of any dislocation of the hip.

The chief indication in treatment is reduction of the dislocation. Generally this can be accomplished by simple extension. In the cases of small children, in whom it is difficult to maintain continuous extension, it is better to begin treatment by reduction and the application of a cast. If extension and traction are not effective within a month, some other method should be adopted. Chief among other methods is forced reduction under anaesthesia and the application of a plaster cast. Care is necessary, as in coxalgia violent manipulations may disseminate the process. In old cases, operative reduction may be necessary. This should be performed only in the chronic stage of the disease. In coxalgia, the operation should always be adapted to the type and degree of the lesion and the patient's general condition.

In all of the authors' cases except one, extension and immobilization were employed. In some cases they were aided by reduction under anaesthesia. In one case operative reduction was necessary. In two cases ankylosis of the hip joint resulted. In these, reduction was not complete. In one case function was restored entirely, and in another almost entirely. In the case operated upon, the dislocation recurred as removal of the plaster cast became necessary after twenty-five days on account of suppuration. In one case opening of a cold abscess was followed by a gangrenous mixed infection which necessitated resection. The authors state that these cases of simple dislocation very frequently result in ankylosis or marked rigidity of the hip joint.

AUBREY GOSS MORGAN, M D

Speed, K. Fractures of the Neck of the Femur. *Ann Surg*, 1932, xcvi, 951.

The author discusses practical points in the treatment of fractures of the neck of the femur and criteria upon which the prognosis may be based. Various collections of reports on so-called end-results in such fractures show that the average incidence of good results is little better than 60 per cent. Following treatment by apposition, rest, and immobilization, the prognosis for union and future use of the leg depends upon whether the head of the bone has retained its vitality or is undergoing aseptic necrosis, with or without substitution of bone, and whether the supporting bony trabeculae in the head and neck are re-forming to give proper weight-bearing support and lasting function. These determinations may be made by roentgenography at intervals during the course of convalescence and after the patient has become ambulatory.

The histopathology of the changes after fracture of the neck of the femur, the relationship of the blood supply of the head of the bone to healing, and the determinations mentioned are discussed on the basis of laboratory and autopsy specimens obtained at various stages after fracture. The value of different operative procedures in these fractures is also taken up. The author states that it is necessary to consider fractures of the neck of the femur from the standpoint of these factors if we are to obtain clearer indications for reconstruction operations and reliable statistics on the incidence of final cure. Trustworthy statistics can be obtained only when all cases are studied roentgenologically for years.

Goodwyn, T P. Fractures of the Upper End of the Tibia Involving the Articular Surfaces. *South. Surgeon*, 1932, 1, 209.

Fractures of the upper end of the tibia are described and classified. Of importance is recognition of the type of fracture with sloping surfaces which requires traction, open operation, and some fixation other than a cast. The use of a modified Boehler heel clamp is suggested for certain cases. Badly comminuted fractures require traction to maintain reduction. Impaction of the central portion without fracture of the articular portion requires open operation in almost every case. The author cuts a window through the cortex of the tibia just distal to the depressed fragments and then inserts a chisel and raises the depressed fragments into place. To prevent displacement, he removes pieces of cancellous bone from the upper end of the tibia and packs them under the fragments.

WALTER P. BLOUNT, M D

Reich, R S. Fractures of the Calcaneus. *J Am M Ass*, 1932, xcix, 1909.

This article is a report of eighteen cases of comminuted fractures of the calcaneus, nine recent and nine old. Of the nine recent fractures, five were unilateral and four were bilateral. Seven of the nine recent cases were treated by the Cotton-Funston

1. In experimental fractures viosterol in therapeutic doses causes stimulation of the osteogenic layer of the periosteum.

2. Osteogenic differentiation is enhanced by viosterol (Vitamin D).

3. Overdosage of viosterol produces stimulation of the fibrous layer of the periosteum through decalcification of bone and causes retardation in repair.

4. In guinea pigs osteitis fibrosa is stimulated by overdosage of viosterol.

5. Studies of the serum calcium and phosphorus following the administration of high doses of viosterol invalidate the calcium-phosphorus product as a means of prognosticating non-union.

WALTER C. BLOUNT, M.D.

Fernström, J. A.: Isolated Fracture of the Dens Epistropheal Without Spinal Cord Symptoms (Isoliert Fraktur des Dens epistropheal ohne Markverletzungen). *Läkarell d ö Internist K s geniskt Utsäälle n. Bergefrsk* 931 p. 447.

To the three cases of isolated fracture of the dens epistropheal reported in the literature—those of Pierl, Hienboeck, and Laennec—the author adds four more, one of which he observed himself. In every case the cause of the fracture was a fall on the occiput and neck or a severe blow to this region. The force applied to the ligamentous structures between the atlas and the dens epistropheal involved the transverse ligament. Even if the transverse ligament is not torn loose, the dens may break off and the atlas may be displaced somewhat forward. A striking feature is the rapid and complete healing of the grave injury. Contrary to Pierl, the author believes that any conservative method is acceptable if it does not require too prolonged immobilization. The best method is probably the application of a plaster-of-Paris cast to the neck or extension for from four to six weeks in a Gillson sling. After this treatment exercises may be begun cautiously. The theory that severe sequelae will be caused by any dislocation of the atlas, as asserted by Osgood and Lund, is disproved by the author's observations. The gravity of the injury depends only on whether or not the ligaments remain intact.

HEDENRÖD GRÖNBERG (2)

Rotholz, G.: A Contribution on the Surgical Treatment of Sternoclavicular Dislocations (Contributo alla cura chirurgica delle lussazioni sternoclavicolar). *Chir d organo d ortopedica* 933 viii, 218.

The chief difficulty in the treatment of sternoclavicular dislocations is the maintenance of apposition after reduction. Many non-surgical procedures and operations have been suggested for this purpose. The author reports a case in which he used the technique of Henschen with a very satisfactory result. In this technique the dislocated joint surfaces are exposed by a curved incision and the inter-articular disk is partially cut away from its sternal attachment, a pedicle being left at its postero-

superior insertion. The two articular surfaces are then approximated and fixed by two through-and-through sutures of the ligamentous capsule of the joint. The fibrocartilage is bridged across to the head of the clavicle and sutured to the periosteum and adjacent soft parts. The arm is then immobilized in a Desault bandage.

The clinical symptoms and signs and the roentgen findings in the author's case are reviewed briefly and the steps of the operation are shown by illustrations. When the patient was re-examined five months after the operation he was free from symptoms and able to work. *LEONARD T. LUBET, M.D.*

Wirth-Pedersen, G.: Results of the Treatment of Fractures of the Radius (Ergebnisse der Behandlung von Radiusfrakturen). *Haft Tid.* 1932 p. 495.

The most frequent fracture is fracture of the radius, the treatment of which thus far has not given very satisfactory results. Insurance statistics show that of 443 persons with fracture of the radius, only 13 completely recovered and one-third of those treated had a permanent work disability. The author believes that too much attention has been paid to the anatomical position of the fragments and not enough to improvement of function. Recently however the importance of functional therapy has received greater recognition. A plaster-of-Paris cast is now applied so that the hand is kept in dorsiflexion and motion of the fingers is retained. Only the wrist joint is immobilized. Massage relieves the pain, removes hematoma and edema, and, by stimulating the cells, accelerates the transformation of pathological tissues into normal tissues. However active motion is superior to massage for the stimulation of active hyperemia.

The author describes the treatment used at his institution, which consists essentially of reposition of the fragments and bandaging. No massage or passive motion is employed. Of 274 patients, 90 were re-examined subsequently. Twenty showed roentgen changes, but the remaining 70 were completely healed. In 77.8 per cent of the latter the fragments were in good anatomical position. Dislocation was evident clinically in only 12. Function was good in 91.4 per cent. It was found that treatment with active motion from the beginning returned the patients to their work sooner than massage and passive motion. Sixty-five per cent of the patients treated with active motion were able to return to their work within four weeks.

BLANCHET (2).

García, A. L., and Fitts, M.: Simple Pathological Dislocations of the Hip (Las luxaciones simples patológicas de la cadera). *Sevensa Med.* 1932, xxxix, 792.

The authors define simple pathological dislocations of the hip as dislocations not preceded by marked destruction of bone in either the head of the femur or the acetabulum.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Fotheringham, T. Thrombo-Arteritis of the Upper Extremity from the Prolonged Use of One Crutch (Thrombo-arteritis del miembro superior por uso prolongado de una muleta) *Rev méd d Rosario*, 1932, **XXI**, 743

The improper use of crutches, such as the use of crutches which are too long or of only one crutch, results in pressure on the neurovascular bundle of the upper extremity and in some cases leads to nervous or vascular disturbances. Neuritis and phlebitis are not rare, but arterial changes are less common.

The first case of arteritis from the prolonged use of a single crutch was reported by Souquet and Terris in 1924. Since then, five other cases have been recorded in the literature. Two of the six patients had gangrene, and four consulted physicians because of symptoms of ischæmia. Anatomical studies of the brachial artery were made in three cases, but the smaller arteries have never been studied.

The author reports a seventh case. The patient was a man who had used a left crutch since the age of seven years because of infantile paralysis of the left lower extremity. Three months previous to his admission to the hospital he began to suffer from intermittent claudication. Dry gangrene of the fingers developed gradually and was later complicated by wet gangrene of the hand. No pulsations could be detected in the brachial, radial, or ulnar artery. As it was impossible to control the gangrene by conservative measures, a 12-cm. portion of the brachial artery was removed and the forearm amputated at the lower end. Gangrene of the stump necessitated a second amputation in the middle of the forearm. The patient recovered.

The pathological changes in the brachial, ulnar, radial, palmar, and some of the interosseous arteries are described.

The adventitia of the upper portions of the brachial artery showed intense perivascular fibrosis with old extravasated blood undergoing organization. The media was little affected. Arteriosclerotic changes were absent. The intima showed chronic inflammatory changes, and the lumen was obliterated by a thrombus.

The radial artery showed only slight perivascular fibrosis. The media was almost unchanged, but the intima was greatly thickened and the lumen was obliterated by adult connective tissue undergoing canalization. The veins showed only slight changes.

The changes in the smaller arteries were apparently older than those in the brachial artery. The intense perivascular fibrosis and the partly organized extravasated blood in the proximal end of the

brachial artery were interpreted as evidence of trauma from the pressure of the crutch.

The intima of an artery becomes injured first as it is the most delicate layer. Later, chronic inflammatory and proliferative processes of possibly an infectious nature are superimposed. The endarteritis beginning in the brachial artery extends into the lesser branches. Thrombus formation starts in the latter and extends upward into the brachial artery, producing the symptoms of claudication or gangrene when an important collateral branch is obstructed.

In cases with claudication, the use of the crutch should be stopped and arm exercises and Buerger's vascular gymnastics should be given. Thereafter, two crutches should be used. If gangrene is present, conservatism along established lines for the treatment of this condition is advisable.

W. H. MARTINEZ, M.D.

Muro, F. G. Varices (Várices) *Med Ibera*, 1932, **XVI**, 433, 465

The pathological anatomy and clinical forms of varices are reviewed. Mechanical factors certainly play a part in the production of these lesions, but a certain weakness of the vessels is to be assumed as many individuals undergo the same mechanical strain without developing varices. Varicose ulcers are the most frequent leg ulcers and can be differentiated from syphilitic ulcers without difficulty.

Various forms of treatment are used. Some cases can be cured simply by hygienic living and the avoidance of too much standing. The best diet consists chiefly of fruits and vegetables. Foods causing intestinal fermentation should be avoided. The amount of food should be small, and not more than a liter of fluid should be taken in a day. Compressive bandages are commonly employed and are a useful palliative in some cases, but they never bring about cure and in old cases in which there are large, sensitive, inelastic veins they may cause clots and embolism. Alkaline and radio-active waters are of value. Among internal remedies, tonics for the nervous and circulatory systems, gland preparations, and drugs which liquefy the blood, such as sodium citrate and potassium or sodium iodide, are useful. Good results have been obtained with a combination of phlebotonic and opotherapeutic drugs.

Surgical treatment has been used for varices since the time of Hippocrates. For a while it fell into disrepute because of careless technique and severe post-operative infections, but since the introduction of asepsis and improved technique it has given very successful results. There is always some danger of embolism, but if the emboli are aseptic the danger is very much reduced. In the cases of old, obese, or cachectic patients and patients with albuminuria,

method of correction followed by subastragular arthrodesis. The two others were treated by the Boehler method.

Of the nine old cases, subastragular arthrodesis was performed on all because of persistent disability.

Exostoses appearing on the weight-bearing surface of the os calcis were excised and if there was impingement of the lateral portion of the calcaneus this impaction was also resected. In some cases in which the fracture extended into the calcaneocuboid joint this joint was arthrodesed.

Twelve of the eighteen patients obtained good results as they were able to return to their former occupations without a permanent handicap. The shortest period of disability was five and a half months the longest, fourteen months and the average eight and one-fourth months.

Of the remaining six patients, one with a bilateral fracture had a knee complication which prevented him from returning to work. However his heels are sufficiently restored to permit him to work. In the three others the result has been considered a failure because there is persistent pain and the patients have been unable to resume their former occupations. Two patients treated by the

Boehler method were treated too recently to permit a report of the final results. When they were last examined they were able to walk without difficulty but had complete limitation of motion in the subastragular joints.

Surgeons are not agreed that in old untreated cases of fracture of the calcaneus the pain and disability are due to involvement of the subastragular joint and in some instances to the calcaneocuboid joints. The most successful treatment in such cases has been arthrodesis of these joints. It is the consensus of opinion that in recent cases the method of Boehler has achieved the best possible anatomical correction.

In many cases in which good results have been obtained by either the Boehler or the Cotton-Furness method examination discloses complete limitation of lateral motion of the ankle joint due either to spontaneous fusion of the subastragular joint or to a mechanical locking. In recent cases in which there is disability in spite of the best possible correction of the deformity there is pain referable to the subastragular joint. Subastragular arthrodesis is advocated early in the treatment in order to shorten the disability as much as possible.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Ewig, W., and Klotz, L. Studies on the Post-operative State (Studien ueber den postoperativen Zustand) *Klin Wchenschr*, 1932, 1, 932

In this communication the authors report experiments on dogs in which the vasomotor center in the medulla oblongata was paralyzed by the injection of 2 c.cm. of a 5 to 10 per cent solution of novocain by occipital puncture by Trendelenburg's method. In this way collapse with a considerable decrease in the circulating blood was brought about. The amount of circulating plasma and circulating blood, the haemoglobin, the red-cell count, and the serum protein in the capillary blood and in the large vessels were investigated, and X-ray studies were made of the changes in the size of the liver and spleen to obtain a deeper insight into the nature of the blood changes and the mechanism of the various types of collapse.

In vasomotor collapse there was a considerable drop in the circulating blood volume with a decrease in the size of the heart and in the arterial and venous blood pressure. In addition, there were distinct differences in the circulating blood volume as determined by the carbon dioxide and dye methods, and a considerably greater drop in the number of red cells than in the amount of circulating plasma. In the large vessels the haemoglobin and the number of red cells were decreased, whereas in the capillary blood of the superficial portions of the body they were slightly increased. There was no noteworthy increase of blood in the blood reservoirs (liver and spleen) and no evidence of a loss of plasma.

In wound shock conditions were quite different. In this condition there was a decrease in the circulating blood volume, the size of the heart, and the arterial and venous blood pressure. A similar decrease in the amount of circulating blood was determined by both methods of estimation. A considerably greater decrease was noted in the circulating plasma volume than in the number of circulating erythrocytes, and there was a marked concentration of blood in the large and small vessels. There was no demonstrable filling of the liver and spleen with blood.

Visceral shock closely resembled wound shock. It was characterized by a considerable decrease in the circulating blood volume and a drop in the arterial and venous pressure. The drop in the amount of circulating blood was the same according to both methods of determination. The number of circulating red cells decreased slightly, while there was a marked decrease in the amount of circulating plasma. Consequently there was a considerable con-

centration of the blood. The decrease in the circulating blood volume depended principally upon concentration of the blood by a local loss of plasma. There was no increased content of blood in the liver and spleen.

Studies of histamin shock showed a drop in the circulating blood volume and in the arterial and venous pressure. The determinations made by the two methods of blood-volume estimation differed considerably. More blood plasma than any other constituent disappeared from circulation, while there was only a moderate reduction in the number of circulating red cells. Consequently there was considerable blood concentration. The liver became larger, but the spleen was somewhat smaller.

TOBLER (Z)

Ewig, W., and Klotz, L. Studies on Postoperative Shock (Studien ueber den postoperativen Shock) *Deutsche Ztschr f Chir*, 1932, CCXXXV, 681

In the experiments here reported the postoperative condition of the peripheral circulation was studied. It was found that the general condition does not always show the same changes after operation. In addition to very slight postoperative changes, the authors were able to observe two different types of reaction immediately after operation. These are designated as a "compensated" and a "decompensated" postoperative shock.

The compensated postoperative condition is characterized by an increase in the amount of circulating blood, an increase in the venous pressure with more complete filling of the veins, and no change or only a moderate increase in the arterial pressure. The skin is red, somewhat moist, and strikingly well supplied with blood, and the tissue turgor is very good. There are no evidences of vascular or circulatory insufficiency. The further postoperative course is favorable, and in the absence of complications no therapeutic measures are necessary.

The decompensated postoperative state presents an almost exactly opposite picture. In addition to generalized pallor, a damp cold skin (particularly in the extremities), more or less marked cyanosis, and sinking in of the cheeks and eyes, there is a very marked reduction in the amount of circulating blood with a fall in the arterial and venous pressure, collapse of the veins, and considerable acceleration of the pulse. Decompensated postoperative shock presents the typical picture of collapse. Carbon dioxide inhalations and intravenous infusions of glucose are most effective in this condition.

Neither the extent of the operation nor the type of anesthesia is responsible alone for the occurrence of compensated or decompensated postoperative shock. While the increase in the amount of

heart disease, or hypertension, surgery is contra indicated.

The latest treatment of varices is the injection of substances to bring about sclerosis of the vessels. The injections should always be made into superficial veins and entirely within the veins. The various substances used include quinine hydrochloride, sodium salicylate, sodium carbonate, sodium citrate, biniodide of mercury glucose, and glycerin. The results are very good. Recurrences have been infrequent even in patients under observation for from eight to ten years. AUDREY GORE MORROW, M.D.

BLOOD; TRANSFUSION

Birch, C. L. Hemophilia. *J Am M Ass.* 1932, xlix, 1556

Hemophilia is transmitted by females and manifested by males. A study of twenty families through from four to seven generations showed that persons with hemophilia have more daughters than sons, while transmitters have more sons than daughters.

Fatal hemorrhage may follow the most trivial injury and may occur in any part of the body. The most characteristic site is the joints. Extensive subcutaneous hemorrhage may follow slight trauma, and intramuscular hemorrhages may occur spontaneously. The white cell count is increased to from 10,000 to 20,000, and there is local and general elevation of the temperature. Free bleeding, as from the nose or kidney is usually not accompanied by fever.

When hemorrhage occurs into an abdominal organ the diagnosis may be difficult. Abdominal bleeding is most frequent in the ileocecal region, where it may suggest appendicitis.

Repeated hemorrhage into a joint results in atrophy and proliferation of bone, liping, and osteophyte formation. Less frequent are hemorrhages into the brain and spinal cord with paralysis and sensory disturbances.

The treatment which has given the best results is the administration of whole ovary in large doses, ranging from 15 to 80 gr daily. Theelin has proved effective during a bleeding phase, but is not of value for prolonged use. Specific improvement is manifested by a decrease in the coagulation time and in the frequency and severity of the hemorrhages, and general improvement by a gain in weight and growth and an increase in the hemoglobin, and general improvement in vitality. E. S. PLATT, M.D.

De Elizalde, F.: A Clinical Contribution to the Study of Werthoff's Disease (Contribución clínica al estudio de la enfermedad de Werthoff). *Semanas med* 1932, xcix, 100

In 1735 Werthoff differentiated from the great group of hemorrhagic conditions a disease which he called "morbus maculosus hemorrhagicus." The author reviews the literature on the condition since that time. The disease is characterized by hemorrhages of the skin and mucous membranes occurring either spontaneously or on slight trauma. The number of blood platelets is greatly decreased, the bleeding time is increased, and the clot is irretractable. The number of erythrocytes remains normal until it is reduced by repeated hemorrhages. The color index is normal or below normal. There may be signs of regeneration such as anisocytosis, polychromatophilia, and nucleated erythrocytes. The number of leucocytes is normal or slightly increased.

Werthoff's disease is rather rare. It occurs most frequently in childhood and adolescence. In some cases there is a family history of the disease or of tuberculosis or syphilis. The pathogenesis of the condition is not well understood. The author reviews the various theories regarding it.

The prognosis is in general good, but depends to a great extent on the patient's age and general condition.

In the medical treatment of the disease, calcium is used also an extract of blood platelets. The condition was first treated by splenectomy by Karsch in 1916. Since then this treatment has been quite generally adopted. The author shows in tabular form the results of splenectomy in seventy-three cases collected from the literature. The results were good in sixty-two (86.3 per cent) and poor in five (6.8 per cent). Five of the patients died. In fifty-one of the cases with good results, a complete cure was reported, but the observation time in twelve of the cases was not given. In twelve cases there was marked improvement, but the observation time in three cases was not stated.

The author reports seven cases which were treated medically. At least temporary recovery resulted in all, but in some of them operation may be necessary later at the time of puberty. The author states that more caution is necessary in performing splenectomy in the cases of children than in the cases of adults as the functional effects of loss of the spleen may be greater in the young.

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SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

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ALBERT GORE MORROW, M.D.

the patient to prevent the humoral crisis. Since 1926, the author has prepared his patients by giving them an intravenous injection of cerebrospinal fluid.

The patient is placed in a sitting position as for spinal anaesthesia. After lumbar puncture between the fifth thoracic and the first lumbar vertebra, a 20-cm syringe is attached to a very fine needle and about 10 ccm of cerebrospinal fluid are withdrawn. A 2-cm syringe containing the anaesthetic solution is then attached to the needle and the anaesthetic solution is injected into the spine after it has been mixed with cerebrospinal fluid drawn into the syringe. The patient is immediately made to lie down and instructed to breathe deeply. An assistant then injects the solution slowly into the vein at the elbow. Operation may be begun after five or six minutes. The anaesthetic preferred by the author is novocain. In the case of a patient weighing 70 kgm, 0.12 ctm of novocain is used.

Daniel has employed this method in 477 cases, chiefly for major laparotomies on the female genitalia. The immediate results are very good. There is little, if any, shock, and the face usually retains its normal color throughout the operation. The pulse becomes accelerated after two or three minutes, attaining a rate of from 100 to 110, but returns to normal in about fifteen minutes. The blood pressure rises from 1 to 3 cm Hg (Vaquez-Laubry apparatus). Complete muscular relaxation is obtained without nausea or vomiting. The spontaneous vomiting which occurred on the operating table in about 5 per cent of the author's cases from ten to fifteen minutes after the injection of the anaesthetic was of very short duration and ceased a few minutes after the patient had taken several deep breaths.

The late results are still better in most cases. The subjective condition of the patient is good during the hours following the operation. In only about 15 per cent of the cases reviewed did postoperative vomiting persist for four or five days. In 15 per cent there was postoperative headache from about the third day, but this was transitory. Headache of spinal origin of the severe, stubborn type was very rare. Headache seemed more persistent in syphilitic patients.

The method has been used with good results also by Paulino and Valerio of Rio de Janeiro, Papin and Gaudier in France, Vitale in Italy, and Stanca in Roumania.

The action of the intravenously injected cerebrospinal fluid is both general and local. It desensitizes the organism and protects against anaphylactic shock. It raises the blood pressure by stimulating the vascular sympathetics. The rise in the blood pressure is followed by an increase in the pressure of the cerebrospinal fluid. The injection may possibly also stimulate and increase directly the excitatory function of the choroid plexus which is inhibited by contact of the anaesthetic with the nerve centers.

In operations on the abdominal viscera spinal anaesthesia has been known to cause hypotension

even to the point of collapse from paralysis of the vessels in the splanchnic region. According to Quarella, this hypotension is unavoidable if one is to get a sufficient anaesthesia up to the fifth or sixth pair of spinal roots, as the paralyzing action of the anaesthetic affects not only the sensory and motor fibers but also the vasoconstrictor nerves. According to Jones, the hypotension is due to vasomotor paralysis and absorption of the anaesthetic into the blood stream. To combat or prevent this hypotension Daniel has found injections of ephedrin of value.

In a clinical and experimental investigation of the action of the cerebrospinal fluid on the arterial pressure, the author found that the fall in the arterial pressure is due not only to the anaesthesia, but also and chiefly to the operative trauma. Simple spinal anaesthesia followed by an intravenous injection of cerebrospinal fluid without previous operation or after extraperitoneal operations caused only a slight hypotension, whereas opening of the peritoneum, long and laborious operative procedures, traction on vascular pedicles or organs, and the introduction of ether into the peritoneal cavity were followed by a sudden and marked fall in the pressure to from 5 to 7 cm Hg.

An investigation of the specific principles contained in the cerebrospinal fluid (folliculin, secretion of the anterior and posterior lobes of the hypophysis) to which some of its effects seemed due led to no conclusions.

EDITH S. MOORE

Finsterer, H. The Value of Local Anaesthesia for Laparotomies. Twenty-Five Years' Experience in 5,172 Abdominal Operations Performed by the Author (*Die Bedeutung der Lokalanästhesie fuer den Verlauf der Laparotomie. Fuenf und zwanzig jaerige Erfahrungen bei 5,172 selbst ausgefuehrte Bauchoperationen*). *Wien klin Wchnschr* 1932, II, 833, 868, 903.

This exhaustive work emphasizes anew the great advantages of local anaesthesia over anaesthesia of other types particularly general anaesthesia and especially in abdominal operations. When local anaesthesia is used neither secondary cardiac death from anaesthesia nor secondary respiratory paralysis occur and there are no deaths from anaesthesia on the operating table. The author states that the so-called death from shock which is attributed by many to the extent of the intervention and the poor general condition of the patient is in reality a death from anaesthesia. The injury to the liver tissue which always results from prolonged ether anaesthesia does not occur with local anaesthesia. Circulatory weakness, which leads to thromboses and later emboli, is not to be expected after operations under local anaesthesia. After local anaesthesia the incidence of haemorrhage and acidosis is less. Fatalities within the first three to five days are extremely rare after operations under local anaesthesia.

All of the advantages of local anaesthesia obtain especially in the major operations and serious ill-

circulating blood occurring immediately after operation is to be attributed chiefly to the evacuation of blood reservoirs, the decrease in the amount of circulating blood is due partly to the accumulation of blood in the splanchnic region and partly to a loss of plasma. However in cases of uncomplicated operation loss of plasma or concentration of the blood cannot be regarded as the only cause of the decrease in the circulating blood as frequently indications of concentration (an increase in the hemoglobin, red cells, and serum protein, and a decrease in the plasma fraction as demonstrated by the hematocrit) are absent. When blood concentration occurs it frequently bears no quantitative relationship to the amount of fluid loss.

Of the anesthetics, avertin has the most unfavorable effect on the peripheral circulation causing always more or less well-defined decompensated shock immediately after the operation. In the further postoperative course the various blood displacements are not always corrected uniformly.

TORLES (Z)

ANTISEPTIC SURGERY; TREATMENT OF WOUNDS AND INFECTIONS

Spinelli, A.: *Essence of Bergamot: a New Surgical Antiseptic* (*L'essence di bergamotte: Nuovo antisettico nella pratica chirurgica*). *Policlinico Roma*, 1932, xdx, sec. chir. 627

Essence of bergamot has been widely used in the manufacture of perfumes ever since the original compound was introduced by De Femalis in 1690. It is employed also in the manufacture of soaps, toilet lotions, and Eucor. Pharmacologically it acts as a hypnotic and depresses the pulse and respiration. Recently it has been used as a refracting oil in microscopy. Like many of the essential oils, it has some bactericidal properties.

Spinelli proposes its use in surgery for sterilization of the surgeon's hands and the field of operation. In bacteriological tests of it on the skin of animals and human skin he found that it causes no irritation and that it is not toxic if absorbed. Because of its pleasant and delicate aroma it should prove of special value in the treatment of petrifying wounds. Spinelli reports the successful use of a 7 per cent solution of essence of bergamot in the pre-operative sterilization of the skin in a large series of surgical cases of various types. A disadvantage of the substance is that it does not stain. This can be corrected by adding indigo-carmin or picric acid.

LEONARD T. LANEY, M.D.

ANESTHESIA

Ruge, E.: *Fatal Hepatorenal Injury Following Avertin Narcosis* (*Toxische Leber-Nierenschädigung nach Avertin*). *Zentralbl. f. Chir.* 932, p. 334.

This is a critical discussion of deaths due to avertin, exclusive of those in which the respiratory cen-

ter was involved. The nine cases of death from hepatorenal lesions following the use of avertin which were collected from the literature by Anaschuetz and divided by him into six positive and three doubtful cases cannot be ascribed solely to the avertin without reservations, as in several of these death might have occurred following the use of some other anesthetic or even without any form of narcosis. Ruge's opinion approaches that of the American and German surgeons (including Anaschuetz) who believe that a dose of 0.1 of avertin per kilogram of body weight or even a little more than this amount is not dangerous to the liver and kidneys.

In the case of a narcotic preparation which is still being assailed by critics, it is desirable to make a careful examination of the details in every case in which there is a suspicion of damage to the parenchymatous organs. The value of avertin narcosis will not be decreased by the scientific tabulation of avertin deaths, but care must be taken that deaths for which it is not responsible are not charged to it.

The author reports the case of a constitutionally weak but apparently organically sound man, he died suddenly one hundred and six hours after a successfully induced avertin narcosis. At autopsy the only organic changes discovered were slight fatty infiltration and degeneration of the liver and kidneys. The question as to whether or not the death in this case should be considered due to the avertin is left unanswered.

RUGE (Z).

Daniel, C.: *Prophylaxis of Undesirable Effects of Spinal Anesthesia by Intravenous Injections of Cerebrospinal Fluid* (*Prophylaxie des accidents rachidiens par injections intra rachidiennes de liquide céphalo-rachidien*). *Bruxelles Méd.* 1932, 22, 343.

In spite of its great advantages, spinal anesthesia is rejected by many surgeons on account of certain undesirable after-effects. These consist chiefly of neurovascular and functional visceral disturbances. Various more or less empirical methods have been suggested to combat them. The insufficiency of these methods is due largely to a lack of knowledge of the pathogenesis of the complications. Arnould and Crémieux attribute the complications to a disturbance of cerebrospinal secretion (hypertension or hypotension of the cerebrospinal fluid, meningeal reaction) whereas Lenke believes they are due to a mechanical disturbance (hypotension secondary to loss of fluid after lumbar puncture in the peridural spaces).

Daniel believes that the after-effects are due to a general rather than local disturbance to a vasosympathetic disequilibrium followed by a humoral crisis (colloidoclastic shock). The same theory has been advanced by Valerio. The complications seem to develop most often in patients with a special hypersensitivity to anesthesia and with endocrine disturbances.

Therapy must be directed toward changing this constitutional state by pre-operative preparation of

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Regelsberger, H. Our Experiences with Coutard's Method of Roentgen Irradiation (Unserer Erfahrungen mit der Roentgensbestrahlung nach Coutard) *Med Klin*, 1932, 11, 1023

The author discusses the roentgen treatment of inoperable tumors and their metastases. He first discusses the methods at our disposal: the classical single intensive irradiation by the method of Seitz and Wintz, the saturation method of Hofelder, and the protracted method of Coutard. He then reports the results of the method of Coutard in sixty cases of tumors of the alimentary tract, skull, nasal accessory sinuses, pharynx, and larynx. Attention is called especially to the intense skin reactions (dry and exudative radiation dermatitis) which appear about three weeks after the beginning of the Coutard method and heal during the next fourteen days. Improvement but no permanent cures have been obtained as yet. When recurrences developed they usually appeared six months after the completion of the treatment. Very satisfactory results were obtained in individual cases of carcinoma of the mouth, tongue, tonsils, larynx, and upper pharynx. In these locations the method competes favorably with the use of radium in massive doses.

Carcinoma of the oesophagus and carcinoma of the lung in regions close to the mediastinum tend to break through into the mediastinum. Circumscribed tumors situated in other parts of the lung react favorably even when the pleura is involved. In cases of generalized or metastatic pulmonary cancer no improvement could be obtained.

In the stomach, tumors of the cardia were influenced considerably more quickly and more thoroughly than tumors of the corpus or pylorus. Hence, for the latter, the author prefers the simple fractional irradiation.

Encouraging results were obtained also in carcinoma of the rectum, often there was visible shrinkage of the tumor during the treatment.

Protracted fractional irradiation is recommended for all cases not operated upon radically and for cases of metastasis in any location. It is important to irradiate sufficiently large fields. The irradiation treatment must be supplemented, when necessary, by palliative surgical procedures such as colostomy, gastro-enterostomy, gastrostomy, jejunostomy, and tracheotomy. Substances having a favorable effect upon metabolism should be administered. Besides trypan blue and glucose, injections of freshly expressed tumor juice are used. When an exudate has developed, its re-injection may be tried. The Fischer-Wasels gas treatment may also be employed as an adjuvant.

The author's experience encourages the further development of fractional irradiation. The method should not be used for tumors of bone or of the prostate as in these conditions there is a tendency toward general carcinosis under such treatment. It is contra-indicated also in the cases of cachectic patients. GAESSLER (G)

Peacock, P. R. The Influence of Experimental Radiology on the Treatment of Cancer. *Glasgow M J*, 1932, cxviii, 383

In the thirty-six years since the discovery of roentgen and radium rays information on radiology has accumulated. The inflammatory reaction in the skin following exposure to rays was first recorded by Walkhoff and Giesel and was observed also by Becquerel and Pierre Curie.

The author believes that although many clinics base their irradiation technique on the results of sound experimental work, many radiologists have developed in an empirical fashion only. He therefore reviews especially experiments which he believes have not received sufficient attention.

In 1903 Bohn noted the selective action of radium rays upon certain tissues and organs in tadpoles. He said, "Those tissues that are growing and differentiating most actively are most radioresistive," and again, "Everything leads one to think that radium acts on the chromatin of the nucleus." In 1904 it was shown that cells undergoing nuclear division are far more sensitive than resting cells. When the abdomens of male rabbits and guinea pigs were exposed to the X-rays it was found that the animals subsequently become sterile without losing their sex instincts. In 1905 sterility in the human being from the application of X-rays for pruritus ani and tuberculous epididymitis was reported. Eighteen cases of sterility in X-ray workers have been recorded. In experimental work on developing eggs a latency of action of irradiation was shown by Bohn. The curative properties of radium as applied to transplantable mouse tumors was demonstrated by Apolant. Thus, it is seen that within ten years after the discovery of radioactivity the fundamental biological properties of the X-rays and radium had been clearly defined in many important respects. In experiments on white rats in which they irradiated the testicles, Bergonier and Tribondeau found that with a suitable dose of irradiation the parent layer of cells of the seminiferous tubules, the spermatogonia, could be destroyed without harming the testicles, without seriously damaging the spermatocytes, and apparently without affecting the spermatids and spermatozoa. From these and other studies they draw the following conclusions:

nesses. Postoperative gastric and intestinal atony is not observed after local anesthesia. Following operations on the stomach this was formerly often interpreted as vicious circle. In reality it is nothing else than an effect of the general anesthetic. The arteriomesenteric occlusion of the duodenum after gastro-enterostomy is a postanesthetic gastric paralysis, in fact an injury of the innervation center. It does not occur after local anesthesia.

General anesthesia reduces the normal resistance of the organism so that even slight infections (air and gastric contents) attack a weakened body and lead to peritonitis. A diminution of phagocytosis lasting for from two days up to several weeks is the rule after every general anesthesia. Postoperative peritonitis develops considerably less frequently after local anesthesia than after general anesthesia, even when the operative intervention lasts up to four hours or longer (gastric resection with resection of the colon).

After local anesthesia, postoperative pneumonia runs a considerably milder course and is never fatal. Hypostatic pneumonia is an anesthetic injury due to poor circulation of the blood. The most frequent form of pneumonia occurring after operations performed under local anesthesia is the retention pneumonia due to poor expectoration. Death from pneumonia is the result of poor functioning of the heart. Under local anesthesia the heart is not injured. Tuberculous pulmonary infections are frequently aggravated by general anesthesia even when it is of

short duration. Local anesthesia has no effect upon them.

Under local anesthesia surgical work is done more quietly because there is more time. For the same reason the suturing is done better. Therefore in resection of the large intestine, the avoidance of general anesthesia is of great importance. General anesthetics should be avoided also in operations on the gall bladder as in gall-bladder disease they act upon an already damaged organ.

In appendectomies performed in the acute stage of appendicitis there is no objection to general anesthesia because the operation is brief. In chronic appendicitis, even in children, local anesthesia is preferable.

It is of course impossible to force a patient to consent to operation under local anesthesia, but an intelligent discussion will almost always induce him to choose it. In private practice the surgeon can take a decided stand as the patient may go to another surgeon if he desires. In the cases of patients in the wards of general hospitals the psyche of the patient must be taken into consideration. In many cases it is advisable to start the intervention with a light general anesthesia and a simultaneously reduced local anesthesia. In this way an extraordinary amount of anesthetic may be saved. The author rejects the splanchnic anesthesia of Kappis. He performs his operations under conduction anesthesia of the abdominal walls combined with the mesenteric anesthesia of Braun. ROSE (2).

malignant tumors. In experiments carried out by the author, slices of Jensen's rat sarcoma 0.5 mm thick which were subjected to lethal doses of ultraviolet rays produced immunity against subsequent inoculations of the tumor. This phenomenon was very similar to the results obtained when the X-rays and radium were used. In attempts to increase the action of irradiation numerous substances have been injected intravenously, but most reports are inconclusive or unsupported by controlled experiments.

The possibilities of monochromatic X-rays have not yet been fully determined. There is some hope that such rays may be more efficient than heterogeneous X-rays.

While the author believes that radon is a poor substitute for radium in clinical work, he has found it of great value in researches on radio-activity. His objection to it in treatment is that, as the radon value is half dissipated in four days, treatment of long duration with low intensity is impossible.

With regard to the dangers associated with radium, the author refers to the inhalation of radon gas and the deposit of active materials on the skin of the hands. The ingestion of radium is known to bring about primary anemias and a tendency toward leukemia, chiefly on account of the action of the live beta rays upon bone where the radio-active material is deposited. Piney has shown by experiments that when severe doses of the X-rays give rise to an increase in the monocyte count and a fall in the lymphocytes to such an extent that the monocyte count exceeds the lymphocyte count, death may be expected. Hence it would seem that in the cases of patients under irradiation treatment frequent examinations of the blood should be made to prevent over-irradiation.

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A. JAMES LARKIN, M.D.

Davis, J. S. Clinical Illustrations of Deep Roentgen Ray and Radium Burns. *Am. J. Roentgenol.*, 1933, xxix, 43.

After describing the gross appearance of X-ray and radium burns and enumerating the microscopic changes that take place in the injured tissue, the author discusses in detail the history, the findings, the treatment, and the results in a large group of cases with involvement of the face, neck, axilla, abdomen, inguinal region, perineum, and extremities.

These cases as a whole have presented the problem of excision of the affected area and restoration by some plastic procedure, a problem frequently complicated by very extensive tissue damage and by infection.

In accomplishing a restoration the author has made use of a number of methods—Ollier-Thiersch

grafts, half-thickness grafts, small deep grafts, single and double pedunculated flaps, tubed flaps, and measured delayed flaps.

The difficulties involved, the extensive character of the lesions treated, and the very excellent results that the author has obtained can be appreciated only by reading the original article and studying the many excellent illustrations accompanying it.

The author stresses again the frequency with which serious burns, with their disastrous consequences for the patient, occur following treatment of comparatively simple conditions or conditions which might better be treated by safer and actually, if not apparently, simpler methods. He emphasizes also the importance of not attempting to treat radiation dermatitis or radium lesions by more X-ray, radium, or ultraviolet light therapy, and so adding still further injury to damaged tissues.

Stevens, R. H. The Treatment of Radiation Injuries of the Skin. *Radiology*, 1932, xix, 345.

After discussing various methods of treating chronic radiodermatitis and ulceration the author tells his experiences with two cases treated by the Finsen light which, "composed of the whole light spectrum with the longer ultraviolet rays only, penetrates deeply into the skin when the latter is under sufficient pressure with the quartz chamber, water-cooled compress of the Finsen apparatus." He cites the experimental observation of Hans Jensen that treatment of the skin by the concentrated arc light of Finsen and Reyn produced the formation of strong connective tissue richly supplied with new blood vessels.

The first patient with severe radiodermatitis and subsequent ulceration of the anterior abdominal wall was treated every two or three weeks for four months with healing of the ulcer, disappearance of keratotic spots, and almost complete cure of the telangiectasis. The second patient, with a painful ulcer measuring 10 by 20 cm. over the lower part of the back, was first treated with ultraviolet light twice weekly for three months. No improvement resulted. She was then treated with the Finsen light at intervals of from two to six weeks for five months with considerable improvement and healing of practically all ulceration.

The author states in conclusion that there are three reliable forms of treatment for roentgen ulcer: excision followed by skin grafting, desiccation and electrocoagulation with or without subsequent skin grafting, and Finsen light treatment.

Blair, V. P., Brown, J. B., and Hamm, W. G. The Surgical Treatment of Post-Radiation Keratosis. *Radiology*, 1932, xix, 337.

After summarizing Wolbach's discussion of the essential pathological changes occurring after excessive X-ray exposure, the authors emphasize the importance of complete removal of the areas affected by such exposure and describe the various methods which they have found most helpful in

1. The most rapidly growing tissues are the most radiosensitive.

2. Proliferative tissues, such as the skin and genital organs, are more radiosensitive than fixed tissues.

3. The most differentiated tissues are the least radiosensitive and vice versa.

Heinecke demonstrated the remarkable radiosensitivity of lymphoid tissue and showed that the circulating lymphocytes are extremely radiosensitive. Doses of irradiation of considerable size produce a leucopenia and particularly a lymphopenia, whereas small doses at suitable intervals increase the number of circulating lymphocytes. Accordingly either an increase or a decrease of lymphopenia or lymphocytosis can be produced experimentally with the X-rays. The number of circulating lymphocytes exerts a profound influence upon the immunity of rats to transplanted tumors. However the conclusion has been reached that immunity is affected not only by the control of lymphocytes, but also by some other factor.

Modern gamma-ray treatment was introduced by Dominik when he advocated platinum-screened radium tubes in 1907. In 1910 Curnet found that, in animals, prolonged irradiation with the X-rays leads first to dermatitis and later to sarcoma. Since then various types of cancer in animals have been produced by both radium and the X-rays.

During the period of time reviewed, the physicists were establishing the nature of the X-rays and gamma-rays. They concluded that X-rays are true ether vibrations of the nature of light and they differentiated the alpha, beta, and gamma rays of radium. The gamma rays are the only true irradiation. The alpha rays cause hemolysis and are intensely destructive to all living cells. They are the active agents in the poisoning of luminous paint workers. Death in such cases is due to aplastic anemia caused by the action of alpha and beta rays on the bone marrow. The alpha particles are of little importance in medicine as they are absorbed by even a sheet of paper but the beta particles, which are very much smaller, are employed in clinical practice. Beta rays are entirely absorbed by 10 mm. of platinum. They are used in the treatment of tumors by the implantation of un-screened or lightly screened radon seeds. Their biological action is similar to that of the X-rays, but they have a limited range and little or no selective action. Gamma rays are the true irradiation and the chief concern of modern radiology. During the past twenty years it has been found that gamma rays can produce practically all of the effects brought about by un-screened radium.

By extensive radiological researches, Regaud and his colleagues have developed one of the best schools of modern irradiation therapy. This school is responsible for the ideas of prolonging the time and reducing the intensity factors in the radium treatment of epidermoid carcinoma so as to cover the cell cycle of the growth. The vulnerability

of the dividing cell is most strikingly demonstrated in Cantù's now famous film.

While it is common practice to refer to radium dosage by the number of milligram hours employed, such an expression is incomplete. Regaud showed that by reducing the intensity and prolonging the time a greater destruction of acanthoepithelial tubules can be obtained with a small skin reaction than with high-intensity short-time treatment. However there are, of course, limits beyond which the intensity cannot be reduced or the time prolonged. Regaud and Nogier called attention to the dangers associated with the use of radium irradiation of low weak intensity reporting their observations in over 100 cases in which such irradiation at repeated intervals resulted in a reduction of the radiosensitivity of the malignant cells. It was found experimentally that by repeated small irradiations the normal degree of radioresistance can be raised 14 times. By experiments on the rat's rectum, anus, and tail skin, Lassarre-Barlow showed that squamous epithelium is least damaged by relatively long exposures at a low intensity, while columnar epithelium is better able to stand a high intensity for a short time. Although squamous epithelium is radiosensitive, a technique has been developed whereby a maximum dose of irradiation may be administered to malignant cells below the skin surface without extending a dose from which the skin may entirely recover. Such a skin irradiation results in the course of a week in a scarlet reaction followed by vesiculation and shedding of epithelium which leaves as inflamed moist surface. The surface returns to normal within about three weeks. While much attention has been paid to epithelium and malignant tumors, little attention has been paid to the stroma. Most radiologists admit that clinical results depend not only on the lethal action of the irradiation on the malignant cells, but also on the body fluids. This view is supported by Cantù who has demonstrated experimentally that the dose required to kill Jensen's rat sarcoma is very much larger than the dose required to kill it *in situ*. However there is some parallel between the dose required to stop mitosis *in vitro* and the dose which leads to absorption of the tumor *in vivo*. Moreover a suitable dose of irradiation apparently causes a tumor to disappear for a period of years even though it recurs later. These and other observations indicate that malignant cells may be held in abeyance for a number of years.

The theory that the radiosensitivity of tumors depends upon their growth activity and differentiation was definitely proved in 100 cases of carcinoma reported by Healy. Nevertheless, radiosensitivity is only one factor determining the treatment and prognosis. Of probably much more importance is the outcome in the extent of the tumor. Mallet has shown that gamma rays excite a feeble fluorescence of visible and ultraviolet rays in serum and fluids. Moreover it is known that ultraviolet rays are lethal to many types of cells, including those of

malignant tumors In experiments carried out by the author, slices of Jensen's rat sarcoma 0.5 mm thick which were subjected to lethal doses of ultraviolet rays produced immunity against subsequent inoculations of the tumor This phenomenon was very similar to the results obtained when the X-rays and radium were used In attempts to increase the action of irradiation numerous substances have been injected intravenously, but most reports are inconclusive or unsupported by controlled experiments

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After summarizing Wolbach's discussion of the essential pathological changes occurring after excessive X-ray exposure, the authors emphasize the importance of complete removal of the areas affected by such exposure and describe the various methods which they have found most helpful in

substituting normal tissue for the tissue lost and so securing the maximum degree of restoration.

The methods of restoration which have been employed to best advantage are the "split graft" method applicable particularly to cases in which a fairly superficial excision permits removal of the affected tissue; the pocket flap applicable to the dorsum of the hand with numerous scattered lesions, some of which may be undergoing malignant degeneration; and the pedicled flap, shifted immediately if thick and short, or shifted after preliminary elevation and resuture at its original site.

The paper is illustrated with a number of illustrations showing the admirable results that can be obtained by good surgery in the difficult cases under consideration.

RADIUM

Martin, G. L.: The Treatment of Malignant Tumors: Advantages of Weak, Heavily Filtered Radium Needles. *J. Am. M. Ass.*, 1933, xvi, 587

Regaud and his associates found that irradiation of great penetrating power and short wave length

has a much less marked necrotizing effect and a greater selectivity for radiosensitive cells than irradiation of less penetrating power and longer wave length, and that the selectivity of radiant energy for radiosensitive cells is increased when the duration of the exposure is increased with a corresponding decrease in intensity. These principles were put into practice by the preparation of long, heavily filtered platinum needles containing small amounts of radium for use in implantation therapy. Numerous workers have developed a therapeutic technique based upon them. The author has used the technique of the London group. He describes his method in detail.

Following a discussion of his own results and the results obtained by others in cases of carcinoma of the mouth, breast, rectum, prostate, and bladder Martin reports several illustrative cases in detail. In conclusion he states that the implantation of multiple heavily filtered radium needles of low strength over long periods of time increases the margin of safety for normal tissue and causes the rapid retrogression of malignant tumors of a relatively high radioresistance without sloughing.

ADOLPH HARTUNG, M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Dale, Sir H. The Relation of Physiology to Medicine in Research and Education *Brit M J*, 1932, II, 1043

Lewis, Sir T. The Relation of Clinical Medicine to Physiology from the Standpoint of Research *Brit M J*, 1932, II, 1046

DALE says that while physiology, in fact all experimental medicine, began with the work of Harvey, it was not until relatively late in the nineteenth century that physiology was considered a separate science. The relative independence achieved, resulting in such discoveries as insulin and such advances in surgery as surgery of the sympathetic nervous system, has produced more for medicine than would have been possible if physiology had remained dependent upon medicine. However, a real danger lies in the tendency of physicians and surgeons to regard experimental research as the function of physiology and pathology and the acceptance and application of its results as the province of medicine and surgery. Freer contact and coöperation on both sides are necessary for healthy development. To physiologists it seems clear that proper relations require the creation of conditions that will enable physicians and surgeons to realize the opportunities created by general scientific progress. It should be recognized that the aims and spheres of activity of physiology and of medicine, while different, must be intimately co-operative. The important and increasingly difficult and responsible task of the teacher of physiology is to incorporate items both of fact and of method in his selection from the overwhelming riches of established fact and suggestive evidence, and yet retain for the student the full educational value of his first and main chance of contact with a purely experimental study of the phenomena of life.

LEWIS stressed the need of a determined effort by clinical medicine to take its proper place as a progressive science on an equal footing with physiology. He stated that physiology is today in a much stronger academic position than clinical medicine and overshadows the latter. It is clinical science which now needs encouragement. Physiological work provides and must continue to provide a great stimulus to medicine. On the other hand, physiology draws inspiration from clinical medicine as exemplified by the work of Harvey, Head, and Dale. It is only a fraction of the truth to state that medicine is founded upon physiology. Clinical progress is achieved in three principal ways: by the discovery of disease or its identification and natural history and by experimental work on clinical cases—

to both of which physiology contributes little if at all—and by the application of physiological ideas and discoveries. Clinical medicine has its own proper field of experimental work in which it is not borrowing from physiology. This essential work is conducted upon patients suffering from disease and can be undertaken only by clinicians with special training, judgment, and facilities. The application of a physiological discovery is, in fact, clinical, and may be beset with difficulties as great as those of the original physiological discovery. The successful enforcement of the legitimate claims of clinical evidence "appears to depend chiefly upon the establishment of suitable posts in clinical research and the formation of a group of full-time workers who can hold their own in method of work and of scientific thought with workers in any other branch of medical science." "What is in mind is not a separatist movement from practical medicine, but a linkage between this and physiology and pathology through a body of workers who have the necessary training and sufficient leisure to understand and apply the knowledge these sciences are gaining and interpret them to those whose energies are devoted to the arduous tasks of recognizing and alleviating the troubles of sick people."

WALTER H. NADLER, M D

Larrabee, R C, and Littman, D. Hereditary Hæmorrhagic Telangiectasia, with a Report of Five Cases in Two Families. *New England J Med*, 1932, CCXII, 1177

Hereditary hæmorrhagic telangiectasia is usually confused with hæmophilia or hæmorrhagic purpura. Extreme thinness of the vascular channels is perhaps one cause of the tendency of the lesions to bleed. In the five cases reported by the authors there were lesions on the tongue and nose as in cases reported previously. In the cases of the authors' three older patients (aged fifty-five, fifty-one, and fifty years) there were lesions on the finger tips. Hæmorrhages from other mucous surfaces and internal organs have been reported as occurring in this condition.

M HERBERT BARKER, M D

Copeland, M M, and Martin, H E. Xeroderma Pigmentosum. *Am J Cancer*, 1932, XVI, 1337

Four cases of xeroderma pigmentosum are reported. The disease begins early in life, usually before the second year, and occurs with about equal frequency in males and females. It is debatable whether or not heredity plays a role in its development, but consanguinity appears to be a factor. Several children of the same family may be affected. Another striking feature of the condition is its

tendency to occur in the members of one sex in a family.

It begins either with freckling or as an erythema with some inflammatory edema following exposure to sunlight. The edema may persist longer than usual and recurs with each successive exposure to sunlight. The erythema is followed by pigmentation which occurs in circumscribed patches or is diffuse. The distribution of skin changes is very characteristic and constant from the beginning. It seems to be most marked in areas unprotected by clothing. The pigmentation or erythema is usually observed first about the face and neck and later appears on the shoulders and arms. It is less dense on the ulnar side of the arms. The thighs are rarely affected, and the legs show only moderate involvement. The color of the pigment varies from a pale yellow to a rather dark brown. As a rule the pigmentation increases, and at about the third or fourth year of life the skin is dry, rough, and scaly. With increased roughening of the skin, atrophic spots appear among the pigmented areas. In the areas of atrophy the pigment disappears. The atrophy of the skin is particularly noticeable about the nose and eyes. Contraction ensues and ectropion is produced. This is soon followed by hyperemia of the conjunctiva and photophobia. The conjunctiva ultimately becomes dry and rough. On the lid edges, warts or inflamed nodules which ulcerate may appear. The ocular conjunctiva is usually hyperemic or covered with a cicely inflamed patches which often extend to the edge of the cornea. The edge may become swollen and ulcers or a tumor may develop. The cornea becomes hazy and blepharospasm with photophobia is the rule. In most cases the optic nerve and intra ocular structures are not affected until very late. The growths on the cornea should be repeatedly removed and the ulcers cured.

In the affected skin areas, telangiectases and warty elevations appear. The warty growths often ulcerate or fungate, giving rise to foul lesions which commonly assume malignant qualities.

The height of the process is usually reached in the sixth or seventh year. The disease is generally fatal before the twentieth year. In the later stages, weakness and anemia develop and the ulcerating areas become quite painful.

The clinical course is characterized by progressive changes with moderate remissions which invariably run a prolonged but fatal course. The principal exciting cause seems to be exposure to the actinic rays of the sun in the cases of persons predisposed to the disease. The predisposition has been ascribed to a congenital susceptibility. While the skin has been considered the site of the predisposition it is possible that chemical disturbances in the blood and peripheral tissues may play a role. A tropho-neuritic or nervous origin has been suggested, but has not been proved. Hematoporphyrin (a photodynamic substance) has recently been suggested as a factor but the data at hand do not support the

theory that a photodynamic substance is responsible. Disturbances in the glands of internal secretion are not as yet correlated with the disease.

The treatment indicated is of the following two main types:

1. Treatment directed toward checking the progress of the disease. It is a good policy to advise the patient to remain indoors or if he must be out of doors during daylight hours, to wear black clothing made especially to protect the parts usually exposed to sunlight.

2. Treatment directed toward curing certain local manifestations such as ulcerations and neoplastic processes. In cases with skin lesions, fulguration by diathermy and exposure to unfiltered radium emanation in carefully graded doses have been beneficial. Radium is not indicated if the process is widespread. In a few cases, small amounts of low voltage X-ray therapy with very little filtration have proved helpful, but as a rule they aggravate the condition. If neoplastic processes supervene recourse may be had to excision or to external or interstitial irradiation, depending upon the site and extent of the lesion. Soothing anesthetic solutions may be applied to the inflamed and infected conjunctiva. Ulcers at the corneal margin should be cured.

JOSEPH K. KAY, M.D.

Andrejev A.: Disease of the Internal Organs and of the Lymph System Associated with Bone Tuberculosis (Ueber die mit der Knochen-tuberkulose lokalisierten Erkrankungen innerer Organe und des Lymphapparates) oder multiple Tuberkulose Lokalisationen. *Acta Chirurgica*, 1931, 4, 350.

The author accepts the principles of the teachings of Ranke, which are based upon investigations on pulmonary and bronchial lymph node tuberculosis, and attempts to apply them to tuberculous bone and joint lesions.

In the treatment of spondylitis by prolonged immobilization the author has noted, in certain number of cases, an increase in the blood pressure to 125 mm. and upward, and a systolic murmur over the aorta. These phenomena were noted in young persons without fistulous processes and without kidney diseases. The author believes them to be due to a disturbance of metabolism resulting in an increase in the uric acid content of the blood. The author believes that in osteo-articular tuberculosis and lymph gland tuberculosis the metabolic disturbance differs from that occurring in the second and third stages of pulmonary tuberculosis according to Ranke's classification. He bases this theory on the fact that during prolonged immobilization in the former conditions there is often, instead of a decrease in weight, general fatty degeneration including the heart and other organs which is associated with an active tuberculosis and suggests another type of tuberculous intoxication. He therefore believes that the involvement of even a single vertebra has a series of sequelae which are manifested not only on the peripheral por-

tions of the body but also in the internal organs and their function

The author emphasizes the multiplicity of localization of tuberculosis of bone. In an investigation of several hundred cases associated disturbances in the internal organs were found in every instance. Most frequent was a pleurohepatocardiac syndrome with unilateral dullness, clouding of the pulmonary field, dissemination foci, roughened breath sounds, a systolic murmur over the pulmonary artery and an accentuated second tone, and sensitiveness of the liver on full inspiration. Narrowing of the chest and prominence of the scapulae were observed. Most common was fibrous tuberculosis of the lung. The systolic murmur over the pulmonary artery is attributed to fibrous endocarditis and endarteritis.

The author believes that before heliotherapy is used the patient's allergic condition should be determined by the von Pirquet or Mantoux retest. He points out the possibility of future development of bone tuberculosis in young persons with bronchoadenitis or mediastinitis. His investigations have shown that in from 40 to 49 per cent of the cases of lymph-gland tuberculosis of the neck and the mesentery the causative factor is the tubercle bacillus of the bovine type. He emphasizes the necessity of proper veterinary supervision to eradicate tuberculosis in cows.

SEBOLD (Z)

Warren, S., and Gates, O. Multiple Primary Malignant Tumors. A Survey of the Literature and a Statistical Study. *Am J Cancer*, 1932, **xvi**, 1358

Cases of multiple malignancy collected from the literature and including 40 cases observed by the authors at the Harvard Medical School number 1,259. The authors believe that the criteria for multiple malignant tumors laid down by Billroth are too strict. Billroth postulated that each tumor must have a different histological appearance and a different location from the others and must produce its own metastasis. The last requirement would, of course, rule out a very large number of cancers. According to the authors' experience, over 40 per cent of autopsied cases of carcinoma of the cervix uteri show no evidence of metastasis. In the study herewith reported the authors included only cases in which each of the tumors presented a definite picture of malignancy and was distinct and there was no probability that one was a metastasis of another.

Most reports of multiple malignancy in the breasts are open to criticism, the probability of metastasis from the other breast being strong. Because of the difficulty of differentiating between multiple origin and metastasis, most of the reported multiple ovarian tumors were excluded from the authors' study. Numerous cases of carcinosarcoma, particularly of the thyroid, may be looked upon with suspicion. These also were omitted from the authors' tables. Also omitted were cases of types of malignancy known to be multiple under ordinary

circumstances, such as myeloma, cases of malignancy which is frequently multicentric in origin, such as carcinoma of the liver, cases of teratomata, and cases of multiple tumors of questionable malignancy, such as the so-called carcinomata of the skin appendages. Multiple carcinomata of the rectum arising on the basis of polyposis might be open to question so far as their consideration as independent tumors is concerned as all of them are related to the same etiological factor. However, the authors believe they are fully as well substantiated as multiple carcinomata of the skin, the independence of which has never been questioned. The distinction between synchronous and metachronous tumors is of slight importance, and certainly synchronous occurrence should not be insisted upon as a criterion of multiple malignancy.

On the basis of all statistics, the frequency of multiple malignancy is 1.84 per cent of cancer cases. On the basis of American statistics, it is 3.9 per cent. In the authors' own series of 1,078 cancer autopsies, the frequency was 3.7 per cent. The average duration from the onset of the earliest tumor to death in their cases was three years. Multiple cancers occur at approximately the same age as single cancers. Multiple malignant tumors occur more frequently than can be explained on the basis of chance. The authors believe that a person with one cancer is more apt to develop a second cancer than would be expected from chance alone. This theory implies a definite predisposition or susceptibility to cancer or exposure to some influence favoring the development of cancer. The nature of the predisposition is as yet unknown.

JOSEPH K. NARAT, M.D.

Martin, C. L. Squamous-Cell Carcinoma of the Skin. *Am J Roentgenol*, 1932, **xxviii**, 728

The efficacy of irradiation therapy for basal-cell carcinoma of the skin is generally recognized. Squamous-cell carcinoma is much more radioresistant, but the author believes that roentgen and radium irradiation is the therapeutic method of choice for all tumors of this type except those situated on some cartilaginous structure such as the auricle of the ear.

Martin follows Pusey in treating cancer of the lip with roentgen rays. He gives from 5 to 10 erythema doses in a period of from eight to fourteen days. No radium is used unless marked induration is felt beneath the tumor or unless the process extends well out into a mucous membrane. The technique is described in detail, and the results of the treatment are shown by photographs. The technique of the use of radium needles for deeper lesions is also described.

Statistics are presented to prove the contention that even in cases of lymphatic metastasis to the neck, roentgen-ray therapy is preferable to block dissection. In addition, its economic and cosmetic advantages are pointed out.

NATHAN N. COHEN, M.D.

GENERAL BACTERIAL, PROTOZOAN AND PARASITIC INFECTIONS

Fleming, A.: On the Specific Antibacterial Properties of Penicillin and Potassium Tellurite. *J. Path. & Bacteriol.* 1932, 22: 171-183.

Penicillin and potassium tellurite have been used as selective antibacterial substances for several years. The former is the filtrate of a broth culture of penicillium notatum which has a remarkable inhibitory effect on the growth of certain bacteria, but almost no effect on the growth of others. An unusual selective antibacterial power is exhibited also by potassium tellurite. As these substances act on entirely different bacterial species, bacteria which are penicillin-sensitive are usually tellurite-insensitive and vice versa.

Penicillin is used for the following purposes:

1. To isolate hemophilic bacteria. These bacteria are very insensitive to penicillin and are usually found in situations where there are normally many penicillin-sensitive bacteria which tend to obscure them.

2. To isolate a partially sensitive bacterium in pure culture from a mixture with more sensitive organisms.

3. To separate the gram negative cocci of the mouth.

4. To demonstrate bacterial antagonism.

5. As a dressing for infected wounds.

Tellurite has been employed for the isolation of bacillus diphtheriae and in studies of urine, feces, and other substances usually containing the bacillus coli.

JACOB M. MOSE, M.D.

DUCTLESS GLANDS

Rony H. R.: Juvenile Obesity. *Endocrinology* 1932, 22: 461-467.

Because of the known marked effects of the glands on somatic, sexual, and mental development, the juvenile age is a sensitive test period for the detection and identification of glandular disturbances. The author studied fifty unselected cases of obesity in childhood and adolescence to determine the possible rôle of endocrine disturbances in the causation of obesity. The study included careful consideration of the history, clinical examination, measurements of growth, studies of sexual and mental development, the basal metabolism, and sugar tolerance, and roentgenography of the sella turcica.

Disturbances of the pituitary gland and the sex glands, a moderately low metabolism with hypothyroidism, abnormal sugar tolerance, and mental deficiencies are frequent findings in juvenile obesity. All except six of the fifty subjects studied by the author showed abnormalities in at least one of these fields. However the anomalies represented deviations from the normal in both directions inasmuch as in some cases hypofunction and in others hyperfunction of the same gland were found. This fact strongly suggests a relationship, although not of an

etiological nature, between endocrine anomalies and obesity.

There is experimental evidence that the hypothalamus contains structures which regulate the deposition of fat. Even when functioning with normal efficiency this center may be adjusted to an abnormally high body-fat level. Such a center would, of course, have close embryological, anatomical, and possibly functional relationships to the pituitary gland and other metabolic centers in the midbrain.

Accordingly juvenile obesity in persons who are entirely normal otherwise may be due to a developmental anomaly limited strictly to the reserve fat regulating center. If the developmental anomaly includes also related structures in or near the hypothalamus, the various "pathological" forms of obesity will result. GROSS A. COLLETT, M.D.

Wilsniski, K.: The Pituitary Gland as an Endocrine Gland and Attempts Made to Utilize Its Secretion Clinically (Die Zirkeldrüse als endokrine Drüse und Versuche der Anwendung ihres Sekretes). *Glasnik Poljske*, 1932, 21, 396.

In the morphological sense of the term, the pituitary gland is not a gland, but as the individual cells produce a secretion which enters either the post-vascular space or the circulation, it must be considered a gland of internal secretion. As a gland of internal secretion it exerts an influence on the other endocrine glands. Some believe that the pituitary gland has no influence on the genital organs, while others are of the opposite belief. The action of the secretion of the pituitary gland upon the other organs is also in controversy. Berthelinger, Marburg, and Fels are of the opinion that the pituitary gland secretion hinders the development of the organs, especially the genital organs. Lauder and Aukers believe it has a stimulating effect. In an attempt to determine the effect of the secretion upon the organism as a whole and especially upon the genital organs, the author performed experiments on animals, using non-toxic, sterile 1 per cent aqueous extracts of the pituitary gland and a preparation called "epiphysan."

With regard to the action of the extract upon the body as a whole and upon individual organs the author states that he observed no influence upon the cytological picture of the blood nor upon any of its parts either in man or in the animal. However the colloidal balance was disturbed. This was manifested by a change in the surface tension of the serum and a turbidity in serological reactions. No change was noted in the cerebrospinal fluid. The blood pressure decreased from 80 to 40 mm. Hg. The erythrocyte sedimentation was accelerated only slightly but coagulation of the blood was accelerated considerably. The extract produced no effect upon the central nervous system nor upon the contractility of the isolated heart. The basal metabolism was increased in the animal as well as in man. On the other hand the specific dynamic

metabolism varied little after the administration of protein. The action of the pineal gland extract upon the thyroid gland was manifested by a decrease of thyroid insufficiency. The extract checked the secretion of insulin and at the same time stimulated the adrenal glands to activity. This explained the increase of sugar in the blood stream (from 0.1 to 0.24 per cent).

The action of the extract upon the non-pregnant uterus and bowel of the guinea pig resulted in a decrease in the tone of the smooth muscle. Its action on the pregnant uterus was entirely different as it stimulated uterine contractions. Injections of from 0.5 to 1.5 c.cm. of a 1 per cent aqueous extract of the pineal gland into young rabbits of both sexes produced a retardation of growth and a decrease in the size of the organs. The thyroid glands of these animals were much smaller than those of the control animals and contained less colloid material. In the ovary, degeneration of the follicles was observed. In the uterus, the muscle fibers disappeared and there was a proliferation of the stroma. In the testicles, degeneration of the cells and a decrease in the number of spermatozoa were found. Similar, though less marked, changes were noted in the mature animals. In the mature animals the uterus enlarged as the result of proliferation of the connective tissue and stroma under the influence of the pineal gland extract. The endometrium showed a proliferation of the connective tissue. All of the experimental animals, both males and females, were sterile for one and one-half years.

On the basis of the results of his experiments the author began to treat dysmenorrhœa due to con-

genital hypoplasia of the uterus with extract of the pineal gland. The result was the establishment of normal, painless menstruation. The extract has been employed successfully also in the treatment of painful urination, marked contraction of the non-pregnant uterus, spastic conditions of the colon, and all conditions with increased spasticity of the smooth muscle. In cases of hypertension the extract produces a definite drop in the blood pressure and is antagonistic to the extract of the posterior lobe of the pituitary gland, which increases the tone of the smooth muscle. The nervous phenomena following the removal of the uterus and ovaries disappear in most cases after the administration of pineal gland extract. The author states that he used the extract very successfully in the case of a woman forty-two years old who complained of severe postoperative nervous symptoms and eczema of the lower extremities. By means of the Aschheim-Zondek test he determined that the curative effect of the extract on the eczema was due to its direct action on the metabolism and was not brought about indirectly by the anterior lobe of the pituitary gland.

From these observations and those of others the author concludes that the extract of the pineal gland affects all of the other endocrine organs and especially the genital organs. Its action is variable and depends considerably upon the sex of the patient. Even its action on the genital organs is variable as there is an inhibiting action in addition to a stimulating action. Therefore we must conclude that the function of the pineal gland depends upon factors as yet unknown which influence the character of its action.

STANISŁAW SOBIEŃSKI (G)

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INTERNATIONAL ABSTRACT OF SURGERY

MAY, 1933

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Mitchell, G. F. Total Avulsion of the Scalp *Brit M J*, 1933, 1, 13

The author describes an operation which he used successfully in a case of avulsion of the scalp. The denuded area, about 6 in. in diameter, and the remaining shaved scalp were dressed in saline packs. Under full anaesthesia, incisions extending down to the pericranium—three on the lateral and two on the anterior and posterior aspects—were made. The flaps so formed were about $\frac{3}{4}$ in. wide. Care was taken to leave sufficient attachment at the ends of the flaps to assure an adequate blood supply. No attention was paid to haemorrhage. Each succeeding whole-thickness flap was undercut and levered toward the center. The upper lateral flaps were sutured with strong catgut. The next lateral flaps were then sutured to the first ones, a gap of $\frac{1}{2}$ in. being left, and the third lateral flaps were sutured to the second, another gap of $\frac{1}{2}$ in. being left. In the same way the anterior and posterior flaps were undercut, levered to the center, and fixed by catgut sutures.

Haemorrhage was controlled by means of pressure, and a pressure bandage was applied. At the end of a week the flaps were found firmly adherent to the pericranium. At a subsequent operation two tongue flaps from the back of the scalp were turned up into the adjacent gaps after the removal of thick granulations. None of the hair-bearing scalp flaps was destroyed. Within a few months the hair was growing well and the granulation areas were smooth and flush with the adjacent scalp.

JACOB M. MORA, M.D.

Figl, F. A. Fractures of the Jaw *Surg, Gynec & Obst*, 1932, 14, 762

Fractures of the jaw may result from either direct or indirect violence. Because of its structure and greater vulnerability, the mandible is more frequently fractured than the upper jaw.

The symptoms and signs of fracture of the jaw are in general those of fracture elsewhere in the body. Local pain, tenderness, loss of function, swelling, hypermobility, crepitus, and ecchymosis are usually present. In most cases corroborative roentgenological evidence is relied upon for a positive diagnosis.

Fractures of the jaw may be followed by serious complications. Frequently they are accompanied by a fracture of the base of the skull. The complications of fracture of the mandible include perforation of the glenoid cavity through either the middle cranial fossa or the external auditory canal, primary or secondary haemorrhage, and dislocation of one or both condyles. Osteomyelitis and submaxillary or cervical phlegmon frequently develop as a result of mandibular fracture. Late complications are non-union and bony ankylosis of the temporomaxillary articulation. In cases of fracture of the condyle the possibility of the latter is increased.

When a fracture of the jaws is accompanied by a more serious injury or by shock, this condition must be given attention before reduction and fixation of the jaw fracture are undertaken.

The method of immobilization in a case of fracture of the jaw depends upon the site and duration of the break, whether the fracture is single or multiple, whether teeth are present in the fragments, and whether there has been a loss of bone.

The application of one of the various head bandages, including the Barton and the four-tail, is of little value in the fixation of mandibular fractures except as a supplement to other measures.

Fracture of the mandible in which no teeth remain in the posterior fragment are often difficult to immobilize on account of the tendency of the muscles of mastication to displace the edentulous fragment.

Fractures of edentulous jaws are best treated with vulcanite intermaxillary splints.

Fractures of the condyle are best demonstrated in roentgenograms of the mastoid area and in roentgenograms taken in the so-called Towne position,

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Pfingst, A O, and Townes, C D Endarteritis Obliterans with Spontaneous Gangrene of Both Corneae. *Am J Ophth*, 1933, xvi, 39

The case reported was that of a girl nine years of age. Its outstanding and unusual features were

1 Marked histological changes in the intima of the small arteries in all regions of the body with little or no involvement of the other arterial coats

2 The absence of disease in the veins

3 The absence of organized clots in arteries and veins

4 The absence of gangrene and even of ischæmia of the extremities

5 The presence of infarcts in the kidneys and brain

6 Damage of the arteries of the sclera and choroid of both eyes and gangrenous destruction of the entire cornea of both eyes

7 The occurrence of the condition in a young person

8 The occurrence of the condition in a female

LESLIE L. McCox, M.D

Marsh, E J Lenticonus Posterior Further Study *Arch Ophth*, 1932, viii, 804.

Marsh classifies cases of posterior lenticonus as follows

1 Those of the Colombo type, in which a transparent, hemispherical bulge is set like a skull cap on the posterior pole of an otherwise normal lens

2 Those which are otherwise typical, but show opacity at the bottom of the conus or irregularity in its form.

3 Those of typical lenticonus, but with related opacities or other changes in the lens substance

4 Those the description of which is so vague or with a complication so anomalous as to render their classification uncertain

5 A small group which are cases of quasi-lenticonus rather than true lenticonus

Among the factors to which posterior lenticonus has been attributed are

1 New growth of the lens tissue, "phakoma" The theory attributing the condition to this factor has been abandoned

2 An inflammatory or other pathological process of the tunica vasculosa lentis changing the capsule and interfering with the nutrition of the lens

3 Infolding of a stem of a vessel which produces pressure disorganization of the fiber layers and the formation of the "collar-stud" opacities, the projecting lips of the fold forming the conus

4 Traction by the hyaloid artery at the posterior pole

5 Hernia of the lens substance within the capsule as distinguished from prolapse through the capsule

According to the theory most generally accepted, the condition is due to weakness of the capsule

The author concludes that much more must be learned about the condition before definite conclusions may be drawn as to its nature and before it can be definitely classified. The process of its de-

velopment must be observed, especially in the early stages, and microscopic sections must be studied in clinically observed and recorded cases. Not only the deformed lens, but also the entire eye with the lentiglobus *in situ* must be studied microscopically. As the condition is rare and does not of itself indicate enucleation, the prospect of an early solution of the problems it presents is dim. In the meantime every case discovered should be carefully observed and reported in detail with regard not only to the lentiglobus itself but also to all related complications.

LESLIE L. McCox, M.D

Berens, C, and Posner, A. The Circulation of the Intra-Ocular Fluid. *Am J Ophth*, 1933, xvi, 10

A review of the literature shows that the few experiments made on living human eyes to prove that the optic nerve is an outflow channel for the intra-ocular fluid resulted in negative findings

The authors' experiments were made on the eyes of living animals—rabbit, dog, and guinea pig—and human beings. In most of them the Weed and Wegfarth Prussian-blue precipitation method was employed. Injections of small quantities of an isotonic, non-toxic solution of potassium ferrocyanide and iron ammonium citrate were made into the vitreous. When the eye is fixed in acid formalin immediately, the Prussian blue is precipitated before postmortem changes take place in the tissues

Of the animals, only the rabbit showed evidence of drainage of the intra-ocular fluid through the optic nerve and the posterior portion of the retina

Of the five human eyes used for the experiments, one was normal and four were pathological. In the pathological eyes no Prussian-blue granules were seen in the optic nerves. In the normal eye the granules were found arranged around the central vessels for a distance of 1.5 mm. from the papilla twenty-four minutes after the injection.

LESLIE L. McCox, M.D

Gray, W A Penetrating Wounds of the Posterior Chamber of the Eye. *Brit J Ophth*, 1933, xvii, 15

As a rule scleral wounds with prolapse of the vitreous do not become infected. In none of fifty-three cases reviewed did panophthalmitis result. Apparently the prolapsed vitreous does not afford an easy entrance for bacteria into the interior of the globe. This is borne out by experimental work. Injections of virulent strains of bacillus *procyaneus* into the interior of the vitreous caused very severe infections, but when artificially produced prolapses of the vitreous were bathed continuously in the same cultures panophthalmitis did not occur

SAMUEL A. DUFF, M.D

Pillat, A Changes of the Eyeground in Wilson's Disease (Pseudosclerosis) *Am J Ophth*, 1933, xvi, 1

Pillat reports a case of Wilson's disease (Westphal-Strumpell pseudosclerosis) with a Kayser-Fleischer

that is, obliquely from above and anteriorly with the patient lying on his back. The results of open operation have not been very satisfactory because of the difficulty of maintaining alignment.

Fractures of the coronoid process are unusual. When they are uncomplicated by fracture of other portions of the mandible, immobilization for only a week or two is sufficient.

When an appreciable amount of bone is lost the repair of a fracture of the jaw is always greatly delayed. Non-union is the rule and after complete healing of the wound bone grafting is required. While healing is taking place, fixation of the fragments is secured by a mechanical appliance, or preferably if a sufficient number of teeth are present by interdental wiring.

Non-union of fractures of the mandible may be due to loss of bone, unsatisfactory immobilization, improper apposition of the fragments, osteomyelitis, syphilis, or the presence of a dental root or sequestrum in the line of fracture. Its treatment depends on its cause. In cases of persistent non-union, bone grafting is indicated. Before this is undertaken, both the internal and the external wounds must be completely healed.

Malunion of fractures of the jaw sufficiently pronounced to require surgical treatment is unusual. The possibility of correcting the associated deformity and interference with function by a prosthesis or other means should be considered before resort is had to refracture because refracturing is associated with the possibility of infection and non-union.

Fractures of the upper jaw are usually produced by crushing blows on the face. They are often more difficult to reduce and immobilize satisfactorily than mandibular fractures. Permanent facial deformity commonly results. Such deformities are by no means always an indication of a lack of skillful treatment at the time of the injury.

When fractures are limited to the superior maxilla they most commonly involve the alveolar process and the inferior orbital border. Fractures of the zygoma may be limited to a small portion of the process bearing one or several teeth.

In fractures of the lower orbital border the bony ridge is usually forced backward into the orbit or downward into the nostrum. Injury to the infra-orbital nerve with anesthesia of the area supplied by it is usually present. When recognized within a few days after the injury, depressed fractures of the orbital border can usually be elevated readily.

Fractures involving only a portion of the superior alveolar process may be immobilized satisfactorily by wiring the upper and lower teeth together. If teeth are present at both sides of the fracture a dental appliance can be used to advantage.

Multiple fractures of the upper and lower jaw with mobilization of both entire alveolar processes are at times encountered. Fixation in such cases often necessitates the use of a dental appliance consisting of a double bite block rigidly supported by

adjustable metal arms attached to a plaster-of-Paris skull cap.

ENT

MacMillan, J. A.: Transplantation of the Lachrymal Sac in Chronic Suppurative Dacryocystitis. *Arch. Ophth.* 1933 vol. 8, 831

To overcome the discomfort from tearing which frequently follows dacryocystectomy with removal of the accessory lachrymal gland, the author decided to incise the lachrymal sac transversely just above the obstruction and transplant its end into the nose through the new opening in the lachrymal fossa. He believed that this would insure patency as there would be a continuous epithelial lining.

Twenty-five such operations were performed on twenty-three patients (eleven men and twelve women) ranging in age from twenty-two to sixty-two years. Of the sixteen patients operated upon before December 1931 ten were cured, three were benefited, and three were not benefited. Of the nine who were operated upon since 1933, seven were completely cured, one cannot be traced, and one was benefited.

MacMillan concludes that the operation described is simpler than the external methods as less bone is removed, there are no flaps of mucous membrane to deal with, a profound knowledge of nasal work is unnecessary, and if the result is unsuccessful the sac may be removed through the same incision.

LESLIE L. MCCOY, M.D.

Matt W. G.: Muscle Reinsertion with Tendon Stump and Tenon's Capsule Fixation. *Arch. Ophth.* 1933 vol. 8, 835.

The operation described by the author is based on the following principles of fixation:

1. Firm fixation of the muscle tendon to the tendon flap, whereby the retractive tendency and contraction of the tenotomized muscle are opposed in the same line of force.

2. Curettage of muscle, tendon, and underlying sclera to promote an adhesive reaction and thus favor firm union between the tendon and sclera.

3. Lateral fixation combined with secondary anteroposterior fixation by means of wing sutures attached to Tenon's capsule.

The advantages of this procedure are summarized briefly as follows:

The tendon stump and Tenon's capsule are used for re-attachment of the muscle tendon.

2. The stump anchorage assures correct anteroposterior alignment of the muscle.

3. The fascia bulbi affords secondary anteroposterior attachment with proper lateral fixation.

4. The wing sutures spread out and flatten the tendon and hold it snugly in apposition to the sclera, and firm union with the sclera is promoted by curettage of the apposed surfaces.

5. The procedure is safe, easy and effective.

LESLIE L. MCCOY, M.D.

Diathermy has been employed chiefly by Weve and Larsson. Weve makes a number of perforations around the tear with a fine conical diathermy needle reaching the retina and uses from 40 to 50 ma of current turned on for one second at each entrance. Larsson applies diathermy without perforating over the detached area and at the conclusion of the treatment allows the subretinal fluid to escape through a trephine hole. A large indifferent electrode is applied to the leg or arm and the active electrode is applied to the exposed sclera.

WILLIAM A. MANN, JR., M D

EAR

Ziegelman, E F. An Anatomical Study of Extension of a Mastoid Infection into the Digastric Muscle and Adjacent Structures. *Ann Otol, Rhinol & Laryngol*, 1932, xli, 1063

Between the mastoid tip proper and a so-called inner tip is the digastric groove. This is of surgical importance because if an infection should extend to the external structures by way of cells internal to it, the digastric muscle may be involved, although usually such invasion affects the sinus, the bulb, or the facial canal. On the basis of its anatomy, the digastric muscle might be expected to be involved as frequently as the sternomastoid in tip perforations. However, a dissection of twenty-eight mastoids showed that in 60 per cent the cells of the internal portions of the external tip were sclerotic or diploëtic whereas in 40 per cent the structures were diploë-pneumatic or very definitely pneumatic.

When an infection enters the digastric muscle from the cells of the mastoid tip there is only one direction for it to extend, that is, downward and forward to a point where further extension is possible. Further extension may be upward anterior to the stylo-mandibular ligament or beneath to the sphenomaxillary fossa.

The close relation of the digastric muscle to a large number of pneumatic tip cells suggests the possibility of invasion of the muscle without perforation of the tip, that is, by continuity. From his observations the author is inclined to believe that such invasion is a definite clinical and pathological entity and has a bearing on certain pathological conditions of the neck. He is of the opinion that some of the vague anatomical misplacements of the hyoid bone and larynx may be explained by this hypothesis.

Extension of a mastoid infection into the digastric muscle is characterized by marked pre-auricular swelling and pain. The swelling usually extends along the anterior border of the sternomastoid. Great difficulty is experienced in opening the mouth. The condition must be differentiated from parotitis, parotid abscess, furunculosis, and Bezold abscess.

The treatment is strictly surgical. A submaxillary approach should be used. The digastric muscle should be exposed and the pus located by sharp dissection if possible. Otherwise, Hilton's method should be used.

JOHN F. DELPH, M D

PHARYNX

Kahler, O. The Tonsil Problem. *J Laryngol & Otol*, 1933, xliii, 2

This discussion of the tonsil problem is summarized as follows:

- 1 The function of the tonsils is not known.
- 2 No definitely deleterious effects from tonsillectomy can be demonstrated.
- 3 The tonsillar crypts are filled with an exudate of almost pure pus in 80 per cent of persons with a history of tonsillar infection and in only 20 per cent of those without such a history.
- 4 The most reliable indication for tonsillectomy is a history of infections of the upper respiratory tract.
- 5 A complete tonsillectomy is the only method of eradicating tonsillar infection. X-ray irradiation and tonsillotomy are ineffective and probably harmful.

ELIZABETH CRANSTON

NECK

Soubeiran, M. Cervicofacial Branchiomata (Sur les branchiomes cervico-faciaux). *Arch. franco-belges de chir.*, 1931-1932, xxxiii, 542

The author first reviews the literature on cervicofacial branchiomata from 1882 to date. All writers on this subject are in accord in recognizing the occurrence, in the face and neck, of solid tumors independent of the adult glandular epithelium (salivary glands, thyroid, carotid body), but while the majority believe that these neoplasms develop from branchial rests, others regard them as embryomata analogous to those of the genital glands. Recent researches tend to show that neither of these hypotheses may be correct. The polymorphism of the tumors has perhaps been exaggerated, and the neoplasms should not be confused with the heterogenous neoplasia of the true embryomata. They present the characteristics of local or regional embryonic inclusions. Particularly their formative elements have a remarkable similarity to those of the paradermal tumors described by Malassez.

These tumors may be divided into the following groups:

- 1 Simple cysts of the dermoid and mucoid types, the latter with cylindrical and sometimes ciliated epithelium.
- 2 Polycystic tumors, which include congenital serous cysts, juxtathyroid polycystic tumors, and multilocular cysts uniformly attributed to branchial rests.
- 3 Solid tumors which may be divided into two groups: (1) purely epithelial tumors, which are usually malignant, grow rapidly, and occur usually in the suprahyoid and carotid regions and less often in the parotid region; and (2) classical mixed tumors, which develop in the region of, or within the salivary glands, grow slowly, sometimes attain a considerable size, are of a hard consistency, and show polymorphism of their tissue.

pigment ring in both cornea, a rather peculiar and hitherto undescribed fundus disease. The fundus disease was characterized chiefly by (1) the presence of white dots, either isolated or conglomerated, in the middle or outer layers of the retina, which became more numerous toward the periphery and (2) markedly diffuse degeneration in the parts of the fundus showing the white dots. The retinal vessels, macula, and choroid were unchanged. The right fundus was much more affected than the left. Night blindness in the more seriously affected eye suggested a local degenerative process of the retina. A parallelism of changes in the various parts of the brain and eye was suggested. The differential diagnosis between this fundus disease and other fundus conditions with white dots in the middle and outer layers of the retina is discussed briefly.

LUTHER L. MCCOY, M.D.

Anderson, J. R.: Anterior Dialysis of the Retina. *Dissection or Avulsion at the Ora Serrata.* *Brit. J. Ophth.* 1934, xvi, 64-705.

For detachment of the retina at the ora serrata the author prefers the term "anterior retinal dialysis" to the term "dissection of the retina." The detachment is usually behind, rather than at, the ora. Gonin and Arruga have both reported that 10 per cent of their large series of detachments are of this type. So called "spontaneous detachment" is to be regarded as detachment due to an unrecognized cause.

Characteristic features of anterior retinal dialysis are (1) its location in the inferior temporal quadrant, (2) its greater frequency in males than in females, (3) non-myopic refraction, and (4) its early age of onset. Of twenty-three cases studied, the dialysis occurred in the inferior half of the globe in 95 per cent and in the temporal half in 85 per cent. Its occurrence here probably depends upon the facts that this area is most subject to trauma and that while cystoid degeneration of the retina is common around the entire ora, it is earliest and most marked in the temporal portion. Structural characteristics, especially the attachment of the vitreous base and the traction exerted in vitreous detachment, are important etiological factors. If the pars ciliaris retinae and the ora serrata are torn from the retina, fluid from the vitreous quickly collects behind the retina and detachment results. Young males seem most susceptible to anterior dialysis of the retina, possibly because of their greater exposure to trauma. The retinal detachment of the usual type occurring in high myopia and associated with the degeneration of middle age takes place usually in the superior half of the globe.

As a rule anterior retinal dialysis tends to progress, especially when it occurs in the temporal portion of the globe. The formation of retinochoroidal adhesions may limit the detachment. Inferior dialyses may remain stationary for a long time.

Although some ophthalmologists have found the operative prognosis to be poor in many of these

cases, the author believes there is a reasonable chance of cure by the Gonin method. He has obtained successful results from the wide cauterization of a considerable area or a linear cauterization with an occasional puncture of the choroid with the cautery or trephine. In contrast to Meller he believes that multiple punctures have advantages over a single cauterization. He states that the necessity for several operations renders the prognosis more unfavorable. It seems wise to make the first puncture opposite or a little posterior to the margin of the aperture and subsequent punctures over the margin or a little in front of it, according to the likelihood of forward movement of the margin.

WILLIAM A. M. JR., M.D.

Gonin, C.: Spontaneous and Traumatic Detachment of the Retina and Its Modern Treatment. *Irish J. M. Sc.* 1934, No. 24, p. 679.

Detachment of the retina was recognized before the invention of the ophthalmoscope, but until recently its prognosis was practically hopeless. Gonin believes it is due to retinal tears produced by degenerative shrinking of the vitreous following firm attachment of the vitreous and retina by a patch of choroiditis or to retinal holes produced by degenerative changes in the retina such as the rupture of retinal cysts. According to this theory, closure of the openings in the retina is essential for cure. Tears may be found in from 80 to 90 per cent of cases if thorough search is made for them. The retinal defects include dissection, round holes, and horseshoe-shaped rents. Of 500 cases treated at the Royal London Ophthalmic Hospital (Moorefields) round holes were found in 34 per cent, dissections in 34 per cent, horseshoe shaped tears and slits in 30.5 per cent and irregular openings in 4.5 per cent. The round holes occurred most frequently in the temporal half of the retina, especially in the superior quadrant dissection, in the inferior temporal quadrant and the horseshoe shaped tears in the upper half, especially in the superior temporal quadrant.

Gonin's operation requires accurate localization of the tear and cauterization through the sclera at its exact site. The closure of a large tear by this method is difficult, and the procedure is not applicable to cases in which no tear is found. Of the cases treated at the Royal London Ophthalmic Hospital by the Gonin method, a cure was obtained in from 25 to 30 per cent. The incidence of cure was highest in the cases in which the condition had been present for only six weeks or less.

In the Guist operation trephine holes not involving the choroid are made in the sclera over the area of detachment. A fine stick of caustic potash is then touched to each of the trephined areas and the potash neutralized with acetic acid. The choroid is then perforated in about half of the trephine holes. While this operation is tedious and difficult, it causes little damage and no shortening of the retina and can be used for the treatment of a wide area.

tyrosine supply caused by inhibition of proteolysis

The administration of iodides did not affect the development of colloid goiter in these experiments although it resulted in a greater accumulation of iodine in the thyroid gland. The injection of tyramine resulted in hyperplasia of the thyroid gland and tended to prevent the colloid changes which follow ligation of the pancreatic ducts. Thyroxin, thyroid extract, and pancreatin were found to alleviate the illness following pancreatic duct ligation, but did not affect the accumulation of iodine in the thyroid gland. Thyroid extract exerted no appreciable influence on the colloid changes in the thyroid. Pancreatin retarded the development of the changes slightly, while thyroxin produced hyperplasia and inhibited the colloid changes. These findings suggest a relationship between the pancreas and the thyroid gland.

LEO M. ZIMMERMAN, M.D.

Fortune, C. H. A Clinical Study of the Graves' Constitution and Its Relation to Thyroid Disease. *Ann. Int. Med.*, 1933, vi, 869

In the period from 1927 to 1930, 245 cases representing all types of thyroid disease were studied on the Medical Service of the University of Michigan Hospital. Subsequently the patients were transferred to the Surgical Service and the excised glands were studied in the Pathological Department. The thyroid specimens were examined for lymphoid hyperplasia which is said to indicate the "Graves' constitution" described by Warthin. The examination was confined to the thyroid and did not include other elements of this constitution, i.e., the hyperplastic thymus, generalized hyperplastic lymphoid tissue, underdevelopment of the vascular system, and hypoplasia of the adrenals, especially of the medullary portion. Evidences of Graves' constitution (Warthin) were found in 90 per cent of the cases.

PAUL STARR, M.D.

Engel, A. The Treatment of Basedow's Disease (Die Behandlung von Morbus Basedowii). *Acta med. Scand.*, 1932, lxxix, 125

This report is based on a follow-up of 200 patients treated for Basedow's disease in the First Medical Clinic of the Seraphim Hospital in Stockholm during the period from 1913 to 1930. Some of the patients were treated medically, some by X-ray irradiation, and some surgically. Of those treated medically, 55 per cent were rendered able to work, but the duration of their treatment was prolonged. The mortality in the medically treated cases was 24.7 per cent. In the surgically and radiologically treated cases the mortality was 13.6 and 14.3 per cent respectively and the incidence of cure was about the same. The results of medical treatment were poorest in cases of severe thyrotoxicoses and secondary Basedow's disease. In the cases of young patients with the milder forms of thyroid intoxication, medical treatment gave satisfactory results. The author therefore concludes that it should be limited to cases of the latter type.

LEO M. ZIMMERMAN, M.D.

Katz, B. Erysipelas of the Pharynx and Larynx. *Arch. Otolaryngol.*, 1933, xvi, 20

Erysipelas may spread from the skin to the mucous membrane of the pharynx and larynx or occur in the pharynx and larynx primarily. The Dicks and many others consider the streptococcus of erysipelas specific and distinct. Until all of the controversial points pertaining to the many strains of streptococcus erysipelatis are cleared up it is important for the clinician to remember that the form of disease caused by streptococci depends on the part of the body affected and the reaction of the body.

The epidemics of so-called septic sore throat are identical with milk-borne epidemics of erysipelas of the throat. Moreover there is a striking correspondence between these infections from the bacteriological point of view.

Erysipelas of the pharynx and larynx is characterized by an acute edematous swelling of the mucosa and an accumulation of streptococci in the lymphatic vessels. A phlegmon or abscess may develop later.

The onset of the disease is rapid and may follow tonsillitis or coryza. The tongue becomes swollen, the mucosa and submucosa of the larynx become edematous, and laryngeal stenosis may result. The disease is so acute that it should never be confused with non-inflammatory edema. Acute laryngitis is less severe and associated with only slight edema. The chief dangers of the disease are those common to erysipelas at any site and, in addition, the danger of stenosis of the larynx.

The symptomatic treatment in the beginning should consist of the internal application of cold by means of cracked ice in the mouth, cold applications to the neck, and local applications of epinephrin. Stenosis of the larynx makes tracheotomy imperative. Specific serotherapy and vaccino-therapy should be started early. Katz reports a case in which five intramuscular injections of 100 c.c. of a polyvalent streptococcus serum and a streptococcus vaccine containing 2,500,000 killed organisms were given. He concludes from his experience that specific therapy is very beneficial in these cases.

EARL GARSIDE, M.D.

Krieger, C. H. Postdiphtheritic Laryngeal Stenosis. A Review of the Literature and a Report of Six Cases. *Arch. Otolaryngol.*, 1933, xvii, 49

Stenosis of the larynx is a narrowing in cross-section of the laryngeal airway. Among its numerous causes are intubation, tracheotomy, diphtheria, and secondary infection.

In the treatment, Jackson's method of dilatation and occlusion is the procedure of choice when it is applicable. When continuous dilatation is necessary or desirable, the method of Iglaue seems most logical. A knowledge of the nature and extent of the stenosis is necessary before treatment is begun. This can be gained by direct and retrograde laryngoscopy and roentgen-ray studies.

The author limits his discussion to the hard tumors.

The histological structure of the branchial epithelioma is very uniform. It consists of groups of cells which, in their growth and spread, closely resemble those of cutaneous cancer. The stroma is always adult fibrous tissue. At the points where adjacent glands (salivary glands) are invaded, the plasma-cell infiltration is very abundant.

In the mixed type of branchioma, epithelial tissue and connective tissue are present together. A frequent arrangement of the epithelial elements bears a close resemblance to that of adamantinoma. In the connective tissue, myxomatous and cartilaginous changes are common. Bone formation is rare.

The author believes that the inclusions of embryonic tissue which constitute the neoplasms called branchial tumors are of local or regional origin.

The only treatment of cervicofacial branchioma is extirpation. This must be complete, for if any of the tumor is left, recurrence is likely to be rapid. In spite of their apparent mobility the tumors are usually firmly adherent to the large vessels.

FRANK B. BERRY, M.D.

Stokess, E. H.: Myxodermas. *Med. J. Australia*, 1935, 41, 589.

Ten cases of classical myxodermas occurring spontaneously in persons of middle age are used as the basis for a discussion of the various aspects of the disease. Reference is made also to a number of cases of atypical, incomplete, and treated myxodermas. The author emphasizes the value of determinations of the blood cholesterol in the diagnosis and treatment of the condition. In all of the typical untreated cases reviewed the blood cholesterol was increased from the normal (160 to 200 mgm. per 100 ccm.) to from 351 to 1,000 mgm. per 100 ccm. Upon the institution of thyroid therapy it fell to within the upper limits of the normal. The response of the blood cholesterol is considered a valuable indication of the adequacy of thyroid treatment.

LEO M. ZIMMERMAN, M.D.

Webster B.: Studies in the Experimental Production of Simple Goiter. *Endocrinology* 1935, xvi, 67.

Since 1918 rabbits kept in stock for experimental purposes in the laboratories of the Johns Hopkins Medical School have been found to develop goiter if kept for forty days or longer. The degree of thyroid enlargement is proportional to the length of time the animals have been kept in the laboratory. Microscopic examination shows the goiters to be of the simple, diffusely hyperplastic type. No changes in the general condition of the animals have been observed. Elimination of various articles in their diet revealed that cabbage, one of the principal foods used, was the goitrogenic factor. The maintenance of ideal hygienic conditions did not prevent the development of goiter but the administration of iodine in small amounts afforded complete protection against it.

A seasonal variation was observed, the goiter being more easily produced in the winter than in the summer. This was found to be due to variations in the goitrogenic properties of cabbage harvested at different seasons. Other vegetables of the same group such as Brussels sprouts and cauliflower, were also found to be goiter producing. Desiccation or extraction with ether or acetone deprived the cabbage of its power to produce goiter. Straining for thirty minutes increased its goitrogenic activity.

The metabolic rate of the goitrous animals was from 18 to 30 per cent lower than normal. When 7.5 mgm. of potassium iodide were administered daily the metabolic rate was greatly increased, the animals lost weight, and death resulted in from forty six to seventy two hours. After smaller doses of iodine the metabolic rate showed a temporary elevation and then gradually returned to normal. Involution of the thyroid was observed after the iodine medication. In the stage of hyperplasia the gland was composed almost entirely of Langendorff's chief cells. After involution there was a sudden transition to the colloid type of cell. Webster concludes that these two forms are probably the same cell type in different stages of functional activity.

Ultraviolet irradiation of cabbage doubles its goitrogenic power. This fact suggests that sunlight plays a part in the synthesis of the active agent. Attempts to isolate a goiter producing glycoside were unsuccessful. It has been shown that cyanides are components of the glycosides in this group of vegetables. On the assumption that cyanides were the cause of the goiters, Marine and his associates injected cyanide compounds into rabbits. Thyroid hyperplasia resulted. The cyanides are thought to depress thyroid oxidation. To overcome this effect the thyroid attempts to produce an excess of thyronin, which activates oxidation. This results in relative iodine insufficiency and consequent hyperplasia of the thyroid. LEO M. ZIMMERMAN, M.D.

Davis, J. S., Hinton, J. W. and Killian, J. A.: Disturbed Protein Metabolism as a Cause of Colloid Goiter in Dogs. *West J Surg Obs & Gynec* 1935, 41, 605.

Ligation of the pancreatic ducts in dogs has been found to result in the production of colloid goiter. Thyronin is a compound of tyrosine and iodine. It was thought that the development of colloid goiter following ligation of the pancreatic ducts might be due to the absence of tryptic digestion with a resulting deficiency of tyrosine, inadequate fixation of the available iodine, and storage of iodine in the thyroid gland. The colloid changes are characterized by macroscopic transparency, microscopic colloid accumulation, and an increase in the iodine content. Examination of the blood following the ligation failed to reveal a decrease in the tyrosine and thyronine content, and the administration of tyrosine failed to prevent the development of colloid goiter. Therefore the colloid goiter resulting from ligation of the pancreatic ducts is not due to a decrease in the

are not diagnosed before operation, but their presence may be suggested by the presence of angiomas or naevi on the skin
E S PLATT, M D

Schroeder, A H Cholesteatoma of the Spinal Cord (Cholesteatoma medullar) *An Fac de med, Univ de Montevideo*, 1932, xvii, 591

The author reports in detail the case of a woman thirty-five years old who was operated upon for a tumor of the spinal cord. Lipiodol injected as an aid in the diagnosis was partially arrested at the sixth dorsal vertebra. The clinical manifestations suggested that the tumor was located at the level of the eleventh dorsal vertebra or the second lumbar metamere. Exploration in the latter region disclosed a circumscribed tumor mass on the cord filling the subdural space and compressing the cord. Removal of the neoplasm was followed by uneventful recovery.

Pathological study showed the tumor to be a cholesteatoma of the type described by Cruveilhier as a "tumeur perlée." The author concludes that the discrepancy between the clinical indications of the level of the lesion and the partial block of the lipiodol was due either to faulty technique in the injection or the presence of a local arachnoiditis at the level of the sixth dorsal vertebra coincident with or related to the tumor
HALE HAVEN, M D

PERIPHERAL NERVES

Krabbe, K H, and Ellermann, M Meralgia Paræsthetica (Meralgia paresthetica) *Rassegna internaz di clin e terap*, 1932, xii, 1092

Meralgia paræsthetica is a neuritis of the lateral femoral cutaneous nerve. This nerve, which is purely sensory, arises from the second and third lumbar roots and occasionally also from the first. From its points of origin it runs obliquely downward through the substance of the psoas muscle, enters and traverses the pelvis between the iliacus muscle and the iliac fascia, leaves the pelvis by passing under Poupart's ligament a little medially to the anterosuperior iliac spine, and runs down the thigh in a small canal formed by a reduplication of the fascia lata. At a point about 4 cm below Poupart's ligament it pierces the superficial layer of the canal and divides into two branches, an anterior branch which supplies the lateral part of the anterior surface of the thigh, and a posterior branch for the lateral part of the posterior surface of the thigh.

The parts of the nerve which cross Poupart's ligament and traverse the fascia lata are the parts with least resistance. It is possible that meralgia paræsthetica originates at these points. In acute abdominal conditions the intra-abdominal parts of the nerve may be injured.

Neuritis of the lateral femoral cutaneous nerve is usually unilateral. When it is bilateral one side is more affected than the other. The most conspicuous symptoms are paræsthesias or pains of varying intensity. Some patients complain of pruritus, formication, or a 'pin and needles' sensation on the

lateral part of the thigh. Others suffer with violent or lancinating pains. Still others show the characteristic symptoms of dysbasia angiosclerotica—pains so severe as to prevent walking. An objective sensory sign is anæsthesia or analgesia limited to the external part of the thigh. In some cases this may be replaced by, or added to, a tactile hyperæsthesia.

Fifteen cases of meralgia paræsthetica are reported. Among the causes were chronic encephalitis combined with alcoholism, alcoholism alone, syphilis, abdominal cancer, trauma, traumatic spondylitis of the fourth and fifth lumbar vertebræ, non-traumatic spondylitis, and phlebitis of the lower extremities. In some cases the condition accompanied sciatica (interstitial neuritis) and in some it was of the cryptogenic type.

The authors believe that meralgia hyperæsthetica is more common than is generally supposed, and that as a rule the prognosis is good. The treatment should be directed to the cause. Massage and electrical therapy are useless. Meralgia paræsthetica is usually a self-limited disease. For obstinate cases some surgeons advocate opening the canal on the thigh through which the nerve runs.

DAVID JOHN IMPASTATO, M D

Collier, J Peripheral Neuritis *Edinburgh M J*, 1932, cxxix, 601, 672, 697

The present-day concept of peripheral neuritis began with Graves when, in describing the Paris epidemic of the condition in 1828, he said "This was one of the most remarkable examples of disease of the nervous system, commencing in the extremities and having no connections with lesions of the brain or spinal cord." Later, Todd, in a lecture on lead paralysis, said "I believe that the muscles and nerves are early affected and that at a later period the nerve centers become implicated. The nervous system is thus first affected at its periphery and in the nerve terminals, and the poisonous influence, continuing the contamination, gradually ascends toward the center." Todd's ideas heralded the theory of the toxic origin of peripheral neuritis and involvement of the whole neuron and almost suggested the theory of entrance of the poison by the peripheral end-organ and the axonic ascent which has become generally accepted only during the past few years.

In 1859, Landry, in accounting for his cases of rapid and complete recovery from acute ascending paralysis, concluded that this paralysis develops without structural change such as Wallerian degeneration. Later the theory was advanced that the noxious influence causes at first only a physiological abrogation of function without structural change, but if it is too overwhelming in its intensity and too long lasting it may cause degeneration and even death of the nerve elements.

In 1881, Stewart called the condition "multiple symmetrical peripheral neuritis." Later it was called 'polyneuritis,' a name by which it is still known today. For some years following Stewart's work

The prognosis for ultimate functional recovery is favorable if the cartilaginous framework is not entirely destroyed. The treatment should be carried out in a well-regulated hospital where the patient can be kept under constant observation.

M. HERBERT BARKER, M.D.

Kerns, J. D., and Schugt, H. P.: Primary Submucous Laryngeal Abscesses. *Arch Otolaryngol* 1935, xvii, 22.

Acute submucous laryngitis followed by abscess formation may be produced by irritation, trauma, or an infection such as influenza, scarlet fever or tuberculosis. The abscess may break through the laryngeal cartilage and appear externally or may point into the lumen of the larynx and cause stenosis. Most common are small superficial abscesses in the larynx. Less common, but more serious, are the circumscribed submucous abscesses pointing into the lumen of the larynx. Such abscesses may form under the mucous membrane of the thyroid or cricoid cartilages and frequently present difficulties in diagnosis. It is necessary to rule out laryngeal edema, syphilis, tuberculosis, and cyst.

The symptoms are a scratching in the throat followed by pain on phonation, hoarseness, difficulty in breathing, and the usual systemic manifestations of an acute localized suppurative. Sudden fatal stenosis may occur. The infection may spread to the

lymphatics of the neck and mediastinum. Aspiration of pus from the abscess may be followed by pulmonary infection.

The superficial abscesses in the pharynx and larynx can be opened easily and usually heal without complications. In most cases, external abscesses also heal promptly after incision. In intralaryngeal abscesses obstruction of the larynx may necessitate prompt tracheotomy. The diagnosis is made relatively easy by laryngoscopic examination.

The authors report two unusual cases of laryngeal abscess under the mucosa of the thyroid which extended into the piriform fossa. One was that of a girl of fourteen years and the other that of a man. In the first case the infection was due to streptococci, and in the second to staphylococci. In both cases repeated incisions into the piriform fossa failed to give relief although they established rather free drainage of the pus. The authors therefore decided to drain the abscess externally by creating a window in the thyroid cartilage. The thyroid cartilage was exposed by an external incision and an opening the size of a one-cent piece was made through it with a sharp curette. The perichondrium bulged through the opening. Incision into the perichondrium was followed by the immediate evacuation of from 10 to 15 c.c.m. of pus. In both cases the larynx was found entirely normal on re-examination a year after the operation.

EARL GARRICK, M.D.

are not diagnosed before operation, but their presence may be suggested by the presence of angioma or naevi on the skin

E. S. PLATT, M.D.

Schroeder, A. H. Cholesteatoma of the Spinal Cord (Cholesteatoma medullar) *Ann. Fac. de med., Univ. de Montevideo*, 1932, xvii, 501

The author reports in detail the case of a woman thirty-five years old who was operated upon for a tumor of the spinal cord. Lipiodol injected as an aid in the diagnosis was partially arrested at the sixth dorsal vertebra. The clinical manifestations suggested that the tumor was located at the level of the eleventh dorsal vertebra or the second lumbar metamere. Exploration in the latter region disclosed a circumscribed tumor mass on the cord filling the subdural space and compressing the cord. Removal of the neoplasm was followed by uneventful recovery.

Pathological study showed the tumor to be a cholesteatoma of the type described by Cruveilhier as a "tumeur perlée." The author concludes that the discrepancy between the clinical indications of the level of the lesion and the partial block of the lipiodol was due either to faulty technique in the injection or the presence of a local arachnoiditis at the level of the sixth dorsal vertebra coincident with or related to the tumor.

HALL HAYES, M.D.

PERIPHERAL NERVES

Krabbe, K. H., and Illermann, M. Meralgia Parasthetica (Meralgia paresthetica) *Kashegna uiterna—di klin. e terap.*, 1932, xiii, 1002

Meralgia parasthetica is a neuritis of the lateral femoral cutaneous nerve. This nerve, which is purely sensory, arises from the second and third lumbar roots and occasionally also from the first. From its points of origin it runs obliquely downward through the substance of the psoas muscle, enters and traverses the pelvis between the iliacus muscle and the iliac fascia, leaves the pelvis by passing under Poupart's ligament a little medially to the anterosuperior iliac spine, and runs down the thigh in a small canal formed by a reduplication of the fascia lata. At a point about 4 cm. below Poupart's ligament it pierces the superficial layer of the canal and divides into two branches, an anterior branch which supplies the lateral part of the anterior surface of the thigh, and a posterior branch for the lateral part of the posterior surface of the thigh.

The parts of the nerve which cross Poupart's ligament and traverse the fascia lata are the parts with least resistance. It is possible that meralgia parasthetica originates at these points. In acute abdominal conditions the intra abdominal parts of the nerve may be injured.

Neuritis of the lateral femoral cutaneous nerve is usually unilateral. When it is bilateral one side is more affected than the other. The most conspicuous symptoms are paresthesias or pains of varying intensity. Some patients complain of pruritus, formication, or a "pin and needles" sensation on the

lateral part of the thigh. Others suffer with violent or lancinating pains. Still others show the characteristic symptoms of dysbasia angiosclerotica—pains so severe as to prevent walking. An objective sensory sign is anaesthesia or analgesia limited to the external part of the thigh. In some cases this may be replaced by, or added to, a tactile hyperaesthesia.

Fifteen cases of meralgia parasthetica are reported. Among the causes were chronic encephalitis combined with alcoholism, alcoholism alone, syphilis, abdominal cancer, trauma, traumatic spondylitis of the fourth and fifth lumbar vertebrae, non-traumatic spondylitis, and phlebitis of the lower extremities. In some cases the condition accompanied sciatica (interstitial neuritis) and in some it was of the cryptogenic type.

The authors believe that meralgia hyperaesthetica is more common than is generally supposed, and that as a rule the prognosis is good. The treatment should be directed to the cause. Massage and electrical therapy are useless. Meralgia parasthetica is usually a self-limited disease. For obstinate cases some surgeons advocate opening the canal on the thigh through which the nerve runs.

DAVID JOHN IMBASTATO, M.D.

Collier, J. Peripheral Neuritis *Edinburgh M. J.*, 1932, xxvii, 601, 672, 607

The present day concept of peripheral neuritis began with Graves when, in describing the Paris epidemic of the condition in 1828, he said "This was one of the most remarkable examples of disease of the nervous system, commencing in the extremities and having no connections with lesions of the brain or spinal cord." Later, Todd, in a lecture on lead paralysis, said "I believe that the muscles and nerves are early affected and that at a later period the nerve centers become implicated. The nervous system is thus first affected at its periphery and in the nerve terminals, and the poisonous influence, continuing the contamination, gradually ascends toward the center." Todd's ideas heralded the theory of the toxic origin of peripheral neuritis and involvement of the whole neuron and almost suggested the theory of entrance of the poison by the peripheral end organ and the axonic ascent which has become generally accepted only during the past few years.

In 1859, Landry, in accounting for his cases of rapid and complete recovery from acute ascending paralysis, concluded that this paralysis develops without structural change such as Wallerian degeneration. Later the theory was advanced that the noxious influence causes at first only a physiological abrogation of function without structural change, but if it is too overwhelming in its intensity and too long lasting it may cause degeneration and even death of the nerve elements.

In 1881, Stewart called the condition "multiple symmetrical peripheral neuritis." Later it was called "polyneuritis," a name by which it is still known today. For some years following Stewart's work

The prognosis for ultimate functional recovery is favorable if the cartilaginous framework is not entirely destroyed. The treatment should be carried out in a well-regulated hospital where the patient can be kept under constant observation.

M. HERBERT BAKER, M.D.

Kernan, J. D. and Schugt, H. P.: Primary Submucous Laryngeal Abscesses. *Arch. Otolaryngol.* 1933, xvii.

Acute submucous laryngitis followed by abscess formation may be produced by irritation, trauma, or an infection such as influenza, scarlet fever or tuberculosis. The abscess may break through the laryngeal cartilage and appear externally or may point into the lumen of the larynx and cause stenosis. Most common are small superficial abscesses in the larynx. Less common, but more serious, are the circumscribed submucous abscesses pointing into the lumen of the larynx. Such abscesses may form under the mucous membrane of the thyroid or cricoid cartilages and frequently present difficulties in diagnosis. It is necessary to rule out laryngeal edema, syphilis, tuberculosis, and cyst.

The symptoms are a "scratching" in the throat followed by pain on phonation, hoarseness, difficulty in breathing, and the usual systemic manifestations of an acute localized suppuration. Sudden fatal stenosis may occur. The infection may spread to the

lymphatics of the neck and mediastinum. Aspiration of pus from the abscess may be followed by pulmonary infection.

The superficial abscesses in the pharynx and larynx can be opened easily and usually heal without complications. In most cases, external abscesses also heal promptly after incision. In intralaryngeal abscesses obstruction of the larynx may necessitate prompt tracheotomy. The diagnosis is made relatively easy by laryngoscopic examination.

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EARL GARRICK, M.D.

branch of the pudic nerve is reached. The twigs of this nerve that run to the anal region are carefully safeguarded. If it is necessary to denervate the skin of this area, each terminal twig must be tweaked. Only the twigs that depress the skin when tweaked are to be resected. After ligation of any vessels, the branches between the perineal nerve and the proximal clamp are removed.

If the dorsal nerve of the clitoris is to be resected, it may be found deep to the pudic artery by following the perineal nerve toward the pudic trunk on the surface of the obturator internus muscle. If the pudic nerve has been divided in the posterior part of its course, the dorsal nerve of the clitoris may be sought directly in Alcock's canal.

If it is impracticable to isolate the pudendal branch of the small sciatic nerve in front, an attempt may be made to find the branch as it approaches the perineum.

The deep layers of the wound are then approximated by a few points of catgut and the incision in the skin is closed. The authors have not found it necessary to employ drainage. A similar procedure is carried out on the other side. The postoperative treatment does not differ from that of any other operation on the perineum.

The operation is usually followed by immediate cure of the pruritus. In only one of the cases reviewed by the authors did it fail to give this result. It appears to be well borne.

The authors believe that neurectomy may well be offered to patients suffering from irritative conditions of the vulva unless there is a suspicion of malignant change, when vulvectomy is the only procedure to be considered, and unless the patient is so fat that identification of the various nerves would be tedious and perhaps uncertain, when vulvectomy would be the quickest solution of the problem.

peripheral neuritis was attributed to a poison circulating in the blood which was taken into the body by ingestion or formed within the body by infection. According to this theory the poison affects the periphery of the longest nerves first and most severely because the nutritional influence of the nerve cell and its nucleus is lowest at the most distant part of the nerve fiber. It was believed that as the concentration of the poisoning agent and the duration and depth of its influence increased, the damage extended to the shorter nerves. The histological changes were held to be identical with those of wallerian degeneration—frail breaking up of the axon sheath, a nuclear increase, disintegration of the axis cylinder and ultimate scarring or regeneration.

To explain paralysis of varying distribution produced by different poisons and by the same poison, such, for example, as paralysis of the upper arm, paralysis with wrist-drop, paralysis of the intrinsic muscles of the hand in lead poisoning, and the frequent involvement of the ciliary muscle by diphtheria, the assumption of a physiological affinity of the poison for certain regions was necessary.

In 1879 Lodrey suggested the term "perichymatous neuritis" for this group of conditions to contrast and separate them from neuritis in which the changes occur primarily in the interstitial connective tissue and the nerve fibers either remain intact or become disturbed only secondarily or late. For the latter of which sciatica is the best example, the term "interstitial neuritis" came into use. The author argues that there is essentially no distinct separation between the two types: that while there is a wide separation between the extremes of peripheral neuritis in which the trouble is purely axonic, as in the paralysis of diphtheria and lead poisoning and the extremes of interstitial neuritis in which the disturbance is purely interstitial, as in sciatica, all combinations of the two conditions are of frequent occurrence and due to one and the same cause.

Collier is of the opinion also that acute and widespread perivascular and general lymphocytic inflammation is common in many forms of typical peripheral neuritis and especially in the varieties of unknown cause. He suggests that the pain and tenderness of the nerve and muscle in peripheral neuritis are due entirely to interstitial lesions of the nerve trunk and muscles and that pain does not occur in peripheral neuritis in which the lesion is purely axonic, as, for example in diphtheria, tetanus, and lead paralysis, even though the sensory neurons may be severely affected.

In 1893 Korsakoff called attention to the incidence of peculiar cerebral disturbances, "polyneuritic psychosis," in peripheral neuritis caused by alcohol, arsenic, and other toxins. He thereby introduced the theory of vulnerability of the highest nerve elements of the brain to agents causing peripheral neuritis. Recent histological methods have brought to light conspicuous changes in the lower neurons and in the posterior columns of the cord in peripheral

neuritis. These findings suggest the possibility that the pathological changes are not peripheral but may be a general effect upon the neuron as a whole which is manifested first and most markedly in the outlying parts of the neuron, namely the periphery of the axon and dendrites.

The recent work of Pasteur and Roux, Wahle, Hurst, and others has proved the axonic invasion of the nervous system by toxins and viruses. It is now believed that the nervous system is all protected against noxious agents, poisons, exotoxins (diphtheria, tetanus) and viruses, especially when its elements are sheathed or are enclosed in a fatty white substance. It is less invulnerable when the nerve fiber loses its sheath, and is most apt to be injured at the peripheral end-organ and where the axon is exposed to injury. Therefore while peripheral neuritis may be due to a poison in the blood, the poison reaches the nervous system by axonic secret from the peripheral end-organs. In some cases the dendrites in the brain are portals of entry.

Viruses play an important part in the causation of peripheral neuritis. They gain access to the nervous system by a purely axonic route and usually enter by the olfactory nerve terminals in the upper nostrils of the nose. On reaching the nervous system, a virus travels by a purely axonic route and at a rate which can be accurately measured. It crosses the synapses between the neurons with ease and sometimes follows the anatomical tracts. In monkeys in which poliomyelitis virus has been inoculated in the left nostril, the virus is found successively in the left olfactory tract, left cerebral hemisphere, left pyramidal tract, the decussation of the pyramids, and the right pyramidal tract of the cord as far as the lumbar region, where it causes its most marked destruction. The paralysis develops first in the right leg. In its passage to the site at which it is most destructive the virus does not produce any conspicuous lesions or any disturbance of function and does not multiply but when it arrives at its destination it causes the most rapid neurologic death and intense inflammatory reaction and it multiplies rapidly. Thereafter it spreads and is apt to travel every nerve filament in the body causing an interstitial neuritis and leaving inclusion bodies in all attacked nerve cells which have survived. These inclusion bodies are small balls of encysted virus. It is held that some of the viruses distributed throughout the nervous system may remain alive and cause no disturbance for long periods of time until an event such as exposure to cold or injury suddenly determines the appearance of a lesion. The interstitial nerve lesion and the extra-nerve lesion in herpes zoster may have several situations. They may occur in the posterior horns of the gray matter, giving rise to long-continued pain in the dorsal root ganglion, causing loss of sensibility in the ventral root, causing paralysis and in the extra-neural skin, causing the characteristic eruptions. The remarkable skin lesion is not secondary to a lesion of the dorsal ganglion cells. It is the effect

Coryllos, P. N. The Present Status of Surgical Treatment in Pulmonary Tuberculosis *Am J Surg*, 1932, xviii, 494

This article is based on experience in the tuberculosis services of 2 hospitals with a total of about 2,000 beds in which from 8 to 15 major operations are performed every week and several hundred cases of pneumothorax are constantly under observation.

The author is strongly impressed by the classification of tuberculosis suggested by Ornstein, Ulmar, and Dittler. According to this classification, pulmonary tuberculosis is of 4 types: (1) caseous pneumonic, (2) exudative, (3) exudative productive, and (4) chronic productive.

The caseous pneumonic form corresponds to the ulcerocaseous or fibrotic forms described by others. It is characterized by caseation and the expulsion of the material sloughed out in the formation of cavities.

The exudative form represents an intense allergic reaction in a hypersensitized lung due to a small superimposed tuberculous infection in a patient who is hypersensitive to the tubercle bacillus or its products.

In the exudative productive form strands of scar tissue are left behind after absorption and healing of the inflammatory process.

The chronic proliferative or chronic productive form is little influenced by any type of treatment except in certain cases in which small cavities are present.

Coryllos believes that surgical treatment should be limited to the caseous pneumonic form. The indications vary according to the degree and location of the lesions, the patient's resistance, and the presence or absence of pleural complications. Serous fluid and even purulent tuberculous fluid formed spontaneously or after artificial pneumothorax are not of great importance with regard to the operative indications, but mixed infection, especially septic or anaerobic infection with or without internal or external fistulae, has an influence on the treatment.

In caseous pneumonic tuberculosis the aim of surgical treatment is collapse of pulmonary cavities. The methods of collapse therapy are artificial pneumothorax, phrenicectomy, intrapleural or extrapleural pneumolysis with or without plombage, and thoracoplasty. Other methods of treatment are pneumonostomy, opening and draining of incompressible cavities, and pneumonectomy, the surgical removal of the diseased portion of the tuberculous lung.

The author describes the operative methods of obtaining collapse. With regard to pleural complications he states that when serous fluid or purulent exudate containing only tubercle bacilli is present, repeated tapplings should be avoided unless the exudate threatens life because of its amount, as they are followed by external fistulae and secondary infection of the exudate by pyogenic bacteria. In the

author's opinion, the treatment of choice for tuberculous empyema is thoracoplastic collapse of the pleural cavity. However, in the presence of mixed infection following spontaneous pneumothorax or the formation of a fistula in the chest wall, this procedure is contra-indicated. In some cases oleothorax with gomenol oil or the injection of dyes may be sufficient to check the infection. If these do not prove successful, the cavities should be washed out and drained, preferably by the closed method. When, after subsidence of the acute infection, the lung does not or should not be allowed to expand, thoracoplasty should be done. It should be performed in as many stages as the patient's condition indicates. In cases of putrid empyema, immediate drainage is indicated. The prognosis in septic cases is very serious. Putrid empyema is usually fatal.

Early diagnosis of spontaneous pneumothorax is important. As a rule it is possible from the clinical symptoms. The presence of a bronchial fistula may be determined by injecting gentian violet into the pleural cavity. In some cases it is difficult to arrive at a definite diagnosis of the presence of a pleuropulmonary communication. A method developed in the author's service for this diagnosis consists in analysis of the gaseous contents of the pleural cavity. Whenever the oxygen is less than 2 per cent and the carbon dioxide more than 7 per cent, spontaneous pneumothorax with a persistent bronchial fistula can be excluded. This method allows measurement of the air contained in the chest, and by successive readings during refilling, the determination of the absorbing capacity of the pleural serosa for oxygen and carbon dioxide.

The author believes that the treatment of pulmonary tuberculosis by mechanical means is solved, but that we must perfect our technique and devise some means by which the mortality will be decreased and the operative indications enlarged.

EMIL C. ROBITSHEK, M.D.

Timpano, M. Anterosuperior Mediastinal Hernia in Therapeutic Pneumothorax (Ernie mediastiniche antero-superiori in pneumotorace terapeutico) *Radial med*, 1932, xix, 1317

The author reports four cases of anterosuperior mediastinal hernia occurring in the course of therapeutic pneumothorax. The case histories are supplemented by roentgenograms. In three of the cases the pneumothorax was unilateral and in one it was bilateral.

Mediastinal hernia is rare and tends to become rarer as the technique of pneumothorax improves and the patients are kept under closer observation by roentgenoscopic examinations. The two points at which the mediastinum is most apt to yield are at the site of the thymus where, in the adult, the two folds of the pleura are almost in contact on account of atrophy of the thymus, and the postero-inferior segment of the mediastinum between the aorta and the oesophagus. Yielding at the site of the thymus, which generally occurs in young adults, being pre-

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Warrill, L. B.: Malignant Disease of the Breast. A Statistical Survey of 1,999 Case Records. *Edinburgh M J* 1931; 20:22, 714.

This report is based on the clinical records of cases treated in the Royal Infirmary of Edinburgh for Malignant Disease of the Breast in the period from 1905 to 1931. The author draws the following conclusions:

The average age of patients with carcinoma of the breast is fifty-three years, but as compared with the normal population women fifty-nine years old develop the condition most frequently. The disease occurs equally often in both breasts. It is rather more common in unmarried than in married women. In by far the great majority of cases the first indication of the disease is the formation of a lump in the breast. The average duration of the lump before the patient presents herself for treatment is about fourteen months. There is nothing to suggest that patients seek advice any earlier at any particular age period or that they are presenting themselves any earlier for treatment now than previously. There is no evidence to show that the length of time the lump has been present is of definite prognostic significance. Pain is of singularly little importance as a diagnostic feature and in most cases occurs after the development of the lump.

The most common situation of carcinoma of the breast is the upper lateral quadrant. Next in frequency is a central site deep to the nipple. In a large number of cases the disease is well established by the time the patient seeks treatment. The growth has become fixed, and in many cases the axilla is already involved. The most common change in the nipple is retraction. Discharge and ulceration are much less common.

A correct diagnosis of the state of the lymph glands can be made only by careful histological examination. Both the findings of clinical examination and the appearance of the glands at the time of operation may be misleading. In the majority of cases in which a microscopic examination is made involvement of the lymph glands is found.

The family history does not appear to be of any significance as regards the subsequent development of carcinoma.

The average mortality of radical excision is approximately 4 per cent.

The majority of recurrences develop within three years after operation. In a series of unselected cases the highest incidence of cure to be hoped for is 50 per cent. The most common site of recurrence is in the neighborhood of the original operation. The second most common site is the mediastinum, and

the third the abdomen. Bone involvement occurs most often in the vertebral column.

EARL O. LATIMER, M.D.

TRACHEA, LUNGS, AND PLEURA

Dufourt, A., Etienne-Martin, P., and Faure, J.: Dilatation of the Bronchi in Pulmonary Tuberculosis (*Les dilatations des bronches dans la tuberculose pulmonaire*). *Arch. mal. chle. de l'app. respir.* 1931; 25, 50.

In 1878, Grancher claimed that tuberculosis is one of the chief factors in the production of bronchiectasis. Grancher, Barber, and Halbron recognized two processes in the course of pulmonary tuberculosis which may give rise to bronchial dilatations: lesions in the bronchi themselves, and retraction and distortion of the bronchial walls by neighboring scars in the lung. Halbron produced pulmonary tuberculosis with bronchial dilatations in rabbits and guinea pigs. In 1907, Thirlack and Debré obtained bronchiectasis in the guinea pig following the production of chronic lung lesions with staphylococci. After the introduction of the use of infected oil by Sclard and Forcster the occurrence of bronchial dilatations in pulmonary tuberculosis was proved.

Berard distinguishes three types of bronchial dilatations: (1) those consecutive to congestive and purulent lesions in acute and subacute tuberculosis; (2) those occurring in fibrosis and chronic atrophic tuberculosis; and (3) those occurring in chronic fibrosis phthisis.

In roentgenograms, bronchiectases are apt to be found in the most obscure zones. The triangular shadow alongside the heart on the right side which suggests a mediastinal pleurisy may be due to sclerotic surrounded by bronchial dilatations.

Bronchial dilatations are formed in all of the stages of the cycle of tuberculous infection of the lung. Sometimes the lung tissue between the glands at the hilus and the primary focus is the site of a parabranchial fibrous reaction which surrounds the bronchi and causes bronchial dilatation secondarily. However it is in the areas of lung that remain hepatized for months that the largest bronchial dilatations occur. In ordinary chronic fibrocavicular tuberculosis bronchial dilatations are seldom marked and are localized to a single bronchus or group of bronchi. Such dilatations usually begin about nearby cavities. Bronchiectases develop also in local dense fibrotic lesions and in the fibrosis which follows artificial pneumothorax. In acute curative tuberculosis they are rare as there is not sufficient time for their formation.

The authors report number of cases and include roentgenograms. FRAN. B. BEATT, M.D.

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EMIL C ROBITSHEK, M D

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vented in young children by the presence of the thymus, gives rise to anteroposterior hernia.

Probably the most important factor in the production of a mediastinal hernia is the decidedly positive pressure on the side of the pneumothorax. The immediate cause of the hernia may be an attack of coughing or a sudden movement which raises the pressure. A very low negative pressure on the other side and inflammation of the pleura may be contributory factors. A hernia may develop in either a fixed or a mobile mediastinum.

Röntgen examination is of great importance in the diagnosis of mediastinal hernia, particularly of the small ones which often cause no objective symptoms and are very difficult to detect by physical examination. The oblique and transverse projections are of special value in determining the outline and size of the sac, observing its relations to adjacent organs, and determining the point at which the mediastinum has yielded.

When a mediastinal hernia is causing serious symptoms the pneumothorax air may be withdrawn. Otherwise the air should not be removed as its withdrawal may re-activate the tuberculous focus. Most mediastinal hernias do no serious harm. In three of the author's cases the pneumothorax tract must be continued. In one, the pressure was slightly reduced. One of the patients died from tuberculosis. The treatment should be controlled by roentgen examination and manometric determinations.

ALBERT COME MORGAN, M.D.

Bernard, L., Polk, G., and Boquet, A. Late Results of the Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax (Le tabacotax après un guérison par le pneumothorax artificiel). *Press med. Par.* 1932 26, 1757.

The authors report the results in 270 cases of pulmonary tuberculosis treated by artificial pneumothorax during the period from 1909 to 1930. Of the seventy-four of the patients who cannot be traced, 34 were in such excellent condition at the time of their discharge that it is believed the majority are well at the present time. Ninety-four patients are dead or dying. The majority of the poor results were due to extension of the disease into the other lung. In many of the cases with poor results there were marked pleural adhesions which rendered collapse difficult. Fifteen patients were benefited by the treatment, but continue to show signs of activity of the disease. In the cases of nineteen patients the condition is apparently cured, but for some reason the pneumothorax is being continued. Seventy patients are clinically cured.

The seventy clinically cured patients have been subjected to roentgen-ray study. The condition is regarded as cured only when the patient has maintained or increased his weight, fever and cough are absent, and the sputum is free from tubercle bacilli. The physical signs and X-ray findings are often difficult to interpret. In the roentgenograms the lung fields may vary from clear to almost complete

opacity. The most common findings are retraction of the thoracic wall, increased obliquity of the ribs, narrowing of the intercostal spaces, a sharpened costovertebral angle, an apex lengthened with respect to its breadth, displacement of the mediastinum toward the side of the pneumothorax, and an abnormal position of the trachea anterior posterior or lateral to the usual site. The diaphragm varies in shape but usually has normal motion. Cases with a marked fluid reaction to the pneumothorax usually show a diminution in the transparency of the lungs. Some of the cavities completely disappeared.

The authors conclude that the 70 persons with a clinical cure represent a great economic saving to the state. They point out that these patients were given the treatment in its earliest days, a time it was often offered to persons who had not been cured by sanatorium treatment. Today it is given in the earlier stages of the disease and more cures are to be expected from it.

JOHN W. EYRE, M.D.

Berry, F. B. Tuberculous Propneumothorax with Pyogenic Infection. *J. Thoracic Surg.* 1932, 2, 59.

The author first reviews the history of pneumothorax. Up to the beginning of the nineteenth century pneumothorax was considered to be usually a surgical condition due to trauma. Attention was first called to its importance from the medical standpoint and its frequent association with tuberculosis by Ilard in 1803. Following Ilard's report and the work of Laennec, propneumothorax and its relation to tuberculosis were recognized and widely discussed. At the end of the century the treatments advocated were: (1) aspiration, (2) aspiration and washing, (3) aspiration and the injection of an antiseptic, (4) thoracotomy and (5) combinations of these procedures. After the introduction of artificial pneumothorax, propneumothorax was recognized as an occasional complication. Eventual treatment, if the patient lived, consisted of simple drainage and an Eschscholtz type of operation. This treatment, with some variations, is still used today. The solutions commonly employed for irrigation are Dakin's solution, weak hydrochloric acid, mercurchrome iodine solutions, and various dyes. During the past twenty years the results obtained have also shown progressive improvement.

Seventy-five cases are reviewed. Fifty-four of the patients are males. Forty-two (54.6 per cent) are dead. Fifteen (20 per cent) are restored to normal life, four wearing a small tube and the others completely healed. Nine of the cures followed thoracoplasty and the others were obtained by aspirations and irrigations alone or combined with simple thoracotomy. Four types of therapy were employed: (1) repeated aspiration, (2) aspiration plus irrigations with a 5 per cent aqueous solution of gentian violet, a weak iodine solution, or Dakin's solution, (3) the treatment just mentioned supplemented by thoracotomy and (4) thor-

acoplasty Oleothorax has been used following control of the pyogenic infection by gentian violet and as a preliminary to thoracoplasty. Forty-four of the patients had been treated by artificial pneumothorax. In the cases of three of them the infection was attributable to faulty technique. In the others there had been a spontaneous pneumothorax.

The author tabulates the pyogenic bacteria found and discusses the various treatments in detail. All patients treated by simple aspiration died.

The author believes that the initial use of a 1 per cent aqueous solution of gentian violet for irrigation is distinctly beneficial. He describes the technique. When once the infection is under control and the patient's condition has become sufficiently improved, a radical and extensive thoracoplasty is advisable. When a bronchopleural fistula is present the author recommends an immediate closed or open thoracotomy as these cases do not respond to aspirations and lavage.

Nissen, R. The Operative Closure of Large Bronchial Fistulae, Bronchiectases, and Tuberculous Cavities Which Have Broken Through (Der operative Verschluss von grossen Bronchialfisteln, "Gitterlungen", und durchgebrochenen tuberkulösen Kavernen) *Deutsche Zeitschr f Chir*, 1932, CXXXVI, 573.

The Garré-Lebsche method of obliterating large bronchiectatic cavities, the essential part of which is the cutting out of the entire mucous membrane sac lining the wall of the cavity, subjects the patient to the possibility of severe hemorrhage and air embolism, dangers which become greater the closer the operation approaches the hilus of the lung. The author's experience in performing emergency operations has led to the methodical development of the technique herewith described: the enclosure of a pedicled muscle flap the size of the lung defect in the lung cavity and its fixation by sutures at the outer opening of the cavity. In this procedure the line of incision is so chosen that on closure of the wound the entire area of the external fistula is covered by wide skin flaps. The stumps of neighboring ribs are resected only as much as is necessary to widen the external pulmonary fistula sufficiently for the easy passage of the muscle flap. To insure the vitality of the long muscle strips which are necessary to fill very large cavities it is advisable to effect the mobilization of the strips in two stages. In the use of muscle from the inner aspect of the scapula to fill a subscapular cavity it is advisable to insert a tampon between the scapula and the dissected off muscle to keep the transplant pressed in. The tampon may be removed within fourteen days.

In six cases operated upon in the manner described in the last three years complete healing without a fistula and with freedom from expectoration was obtained. Healing occurred also in two cases of extensive breaking through of tuberculous cavities, but in one of these there is a very large scarred area with marked deformity. GRAF (Z)

Rentschler, C. B. Acute Empyema of the Thorax. *Ann Surg*, 1932, xcvi, 987.

Rentschler presents a statistical study of 100 consecutive cases of acute empyema which were treated surgically.

In 75, the cause was pneumonia, in 10, pleurisy, in 4, influenza, in 1, a discharging ear, in 1, a cold, and in the rest an undetermined factor.

In 26 cases with no mortality the organism found was the pneumococcus, in 25 with a mortality of 20 per cent, a streptococcus, and in 6 with a mortality of 16.6 per cent, a staphylococcus. In 11 with a mortality of 27.7 per cent, there was a mixed infection.

The patients ranged in age from eight months to seventy-three years. Fifty-six were males. The empyema occurred on the right side in 55 cases, on the left side in 45 cases, and on both sides in 1 case.

Aspiration was done in all of the cases. In the majority it was done for diagnosis. In 69 cases it was followed by partial resection of 1 rib, in 22 by intercostal drainage, in 6 by intercostal drainage followed by partial rib resection, and in 1 by bilateral thoracotomy. In 2 cases the treatment consisted of aspiration alone.

Anesthesia was induced preferably by local infiltration with novocain, but general anesthesia was used in 39 cases.

The postoperative treatment consisted essentially in measures to promote free drainage. Irrigations were used in 30 cases. The solution employed was Dakin's fluid, normal salt solution, iodine fluid, gentian violet, or mercurochrome. Transfusions were given for anemia. Lung expansion was favored by having the patient inflate a toy balloon and blow fluid from one bottle to another.

The average length of time the patients remained in the hospital was seven weeks. The complications were of 21 types. The most common complication was marked anemia, which occurred in 12 cases. A recurrence developed in 6 cases, and 1 patient had 6 recurrences. Ten patients died.

J. DANIEL WILLEMS, M.D.

Hedblom, C. A. The Surgical Treatment of Tuberculous Empyema. *J Thoracic Surg*, 1932, ii, 115.

Tuberculous empyema may be defined as a suppurating pleurisy due wholly or in part to tubercle bacillus infection. It is of two principal types: (1) the primary idiopathic type without clinical evidence of associated pulmonary tuberculosis, and (2) the type secondary to a clinically recognizable active pulmonary tuberculosis. These types differ fundamentally with respect to treatment.

In the primary type, obliteration of the empyema cavity is sought through re-expansion of the lung. In the secondary type, collapse of the chest wall and lung, when indicated, accomplishes obliteration of the cavity and favors healing of the pulmonary lesion.

Both types of tuberculous empyema may or may not be infected by pyogenic organisms of varying

violence. In cases of the primary type, secondary infection usually arises from infiduous drainage of an effusion. It may occur also as the result of perforation of the pus into a bronchus. In some cases it may be metastatic from a sore throat or furunculosis or occur by lymphatic extension.

The author reviews 143 cases of tuberculous empyema. Sixty-one were treated by irrigation and drainage only. In 28 of these the effusion was sterile. The cavity was obliterated in 9. Nine (32 per cent) of the patients died. Of 23 cases with secondary infection, the cavity was obliterated in 3 and death occurred in 13 (39.4 per cent). Of 82 cases in which radical surgery was done, there was no secondary infection in 23. The cavity was obliterated in 38 (84.4 per cent) but in 19 of this group a sinus persisted at the time the patient was last seen. Death occurred in 11 (20 per cent).

The tuberculous nature of an empyema is strongly suggested by a preceding "idiopathic" pleurisy with effusion and the presence of extrapulmonary lesions. The condition may be assumed to be tuberculous if it develops in the presence of active pulmonary tuberculosis or as a complication of therapeutic pneumothorax for pulmonary tuberculosis. It is proved to be tuberculous when laboratory tests for tuberculosis are positive.

The presence of a bronchial fistula is assumed if the patient makes large quantities of liquid pus. It is proved if the pus coughed up is stained blue after the injection of methylene blue into the cavity.

In primary tuberculous empyema the aims of treatment are obliteration of the cavity and re-expansion of the lung. In the absence of secondary infection, repeated aspiration of the pus is followed by pneumothorax. In long-standing cases an extra-pleural thoracoplasty should be performed. In the presence of secondary infection in the primary type, the aim is to combat the infection and secure re-expansion of the lung. The pyogenic infection is usually combated by drainage and irrigation with antiseptics. Thoracoplasty or a local plastic operation is usually necessary before complete healing is obtained.

In tuberculous empyema of the secondary type thoracoplasty is advisable unless such a radical procedure is contraindicated by active tuberculosis.

The mortality in cases of tuberculous empyema is due in large measure to active pulmonary tuberculosis or a virulent secondary infection or both.

WILLARD J. KIRK, M.D.

HEART AND PERICARDIUM

Moritz, A. M., Hudson, C. L., and Orsini, E. S. Augmentation of the Extracardiac Anastomoses of the Coronary Arteries Through Pericardial Adhesions. *J. Exper. Med.*, 1913, 17, 937.

The authors examined four hearts with partial or complete obliteration of the pericardial sac by fibrous adhesions. Injection of the coronary arteries with a colloidal suspension of lamp black showed

that the extracardiac anastomoses of these arteries were increased because of the presence of the adhesions. A particularly rich injection of the parietal pericardium was obtained. Afteroscopic examination of the adhesions showed them to contain injected vessels extending from the epicardium to the parietal pericardium. This vascularization was not limited to the usual areas of subpericardial fat. It was present also in regions not ordinarily containing arterial branches. A direct communication between branches of the coronary arteries and the pericardial branches of the internal mammary arteries and free anastomoses with the anterior branches of the thoracic aorta were demonstrated over areas corresponding to the extent of the lesions.

EARL O. LARSEN, M.D.

ESOPHAGUS AND MEDIASTINUM

Gilman, J.: Two New Cases of Non-Traumatic Stricture of the Esophagus in Children (Dernières observations de strictures graves non-traumatiques de l'œsophage chez des enfants). *Bull. et Mém. Soc. d'Chirurgiens de Paris*, 1913, 2nd ser., 391.

The cases reported by the author were those of children two and a half and eleven years of age who had suffered from persistent vomiting. The vomiting had been attributed to gastric disturbances and the stenosis was not discovered until a roentgen examination was made after the dysphagia became incomplete.

In the case of the younger child the obstruction was due to a fibrocartilagenous ring formed by the degeneration of hypertrophied muscle fibers of the diaphragm encircling the esophagus at the cardia. The hypertrophy was analogous to that causing pyloric stenosis in infants. In the case of the older child the obstruction was due to a valve formation with secondary thickening of the mucous membrane resulting from inflammation.

In the first case a clinical cure was obtained by gradual dilatation, and in the second case, by gradual dilatation and circular electrolysis.

CATHERINE E. BATES, M.D.

Cooke, J. V.: Mediastinal Tumor in Acute Leukemia. A Clinical and Roentgenological Study. *Am. J. Dis. Child.*, 1913, 25, 1153.

This report is based on a group of nine cases of acute leukemia with large mediastinal infiltrations. Seventy-four cases of leukemia with mediastinal tumor were collected from the literature.

The nine cases reviewed were found among thirty-eight cases of acute leukemia in children observed at the St. Louis Children's Hospital during the last six years. The incidence of mediastinal involvement was therefore 24 per cent. In none of the other cases was there any clinical evidence of mediastinal tumor. In fifteen, no mediastinal enlargement was demonstrable in roentgenograms or at autopsy. In the remainder roentgenograms were not taken and autopsy was not performed. The patients were all

white boys between the ages of three and thirteen years. The blood picture was typical of acute lymphatic leukemia with a tremendous preponderance of non-granular mononuclear cells and a small percentage of granular polymorphonuclears. In only one case was there no leucocytosis. Of the nine children with mediastinal tumors, four came under observation before any changes in the blood were demonstrable and had symptoms of severe respiratory obstruction. The five others had typical leukæmic changes when they were first seen. One of the latter had marked symptoms of respiratory embarrassment, two had mild symptoms, and two had none.

The high incidence of mediastinal involvement in males is evident also in the cases collected from the literature. Of seventy-four patients, only twelve were girls, the ratio of boys to girls being therefore 5:1, whereas the ratio of the incidence of acute leukemia in boys and girls is 2:1.

The mediastinal tumors are large and constantly located in the superior and anterior mediastinum. The clinical symptoms are apparently due to me-

chanical pressure. They include cough, dyspnea, and cyanosis of varying degree. It is possible for a child with a fairly normal blood count to exhibit a marked leukæmic blood within a very short period of time. When roentgen treatment has been given before the development of the blood picture of leukemia, it has had a very striking effect on the leukæmic mediastinal masses. In four cases so treated there was remarkable clinical improvement. Symptoms of respiratory embarrassment were less marked after twenty-four hours and disappeared in a day or so. In three cases the mediastinal shadow completely disappeared within a week. When the blood picture of acute leukemia had developed before the irradiation, the roentgen treatment was of no benefit and even seemed to accelerate the fatal outcome.

From a study of the clinical and pathological reports of the observed cases the author concludes that, instead of a true neoplastic tumor, the mediastinal mass is the result of infiltration by leukæmic cells carried to the mediastinum by the blood stream.

ALTON OCHSNER, M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Thomas, T. T.: The Use of a Nail in the Basal Operation for Large Inguinal Hernia, Especially Direct and Recurrent. *Surg. Clin. North Am.* 1935 28, 1435.

Thomas reviews statistics showing the poor results so far obtained in the treatment of large inguinal hernia, especially those of the direct recurrent type. He then describes the methods in present use for the repair of the defects.

One of the most serious obstacles to repair in these cases is weakness of the surrounding tissues. To overcome this obstacle Thomas suggests the use of a common large-headed wire nail to cover the defect with aponeurotic conjoint tendons. In the procedure described, a wide-topped nail from 1 1/4 to 1 in. long is introduced inside the outer border of the rectus so that it pierces the fibers of the lateral oblique and transversus muscles and possibly the rectus, and is driven into the pubic bone. One or a caudal suture external to the nail then completes the new floor of the canal and the Basal operation is finished in the usual manner.

In 7 cases treated in the manner described there have been no recurrences during a period ranging from nine months to more than two years. In some of these cases it has been necessary to remove the nail. Previous statistics show that of 313 cases of direct hernia treated surgically a recurrence developed in 10.6 per cent, and that of the recurrences, 47.9 per cent developed within six months.

ARTHUR L. SANCHEZ, M.D.

Clamonte, A.: When Should Acute Primary Pneumococcal Peritonitis Be Operated Upon? (Quando el deve operarse la peritonitis aguda pneumococcal primitiva?) *Reforma med.* 932 2504, 477.

Although the consensus of opinion is that primary pneumococcal peritonitis should be treated surgically, it has not been decided whether the operation should be performed in the first stage of the condition or in the later stages, after abscess formation has taken place. One of the factors entering into the discussion of the time of operation is the difficulty of differentiating between pneumococcal peritonitis and acute appendicitis, in which latter condition early operation is strongly indicated.

The author cites various authorities regarding the differentiation. Attention is called to the fact that in pneumococcal peritonitis the pain is more apt to be diffuse than in appendicitis, and in appendicitis is more apt to be localized in the right lower quadrant of the abdomen. When operation is performed in the early stage of pneumococcal peritonitis, it reveals intense congestion of the ileum and cecum,

but no pus. The appendix participates in the congestive reaction, but shows no special changes.

The various theories of the entrance of the micro-organisms into the peritoneal cavity through the damaged intestinal wall, by way of the lymphatics, and by way of the blood stream are reviewed.

Symptoms in favor of a diagnosis of pneumococcal peritonitis are diarrhoea, herpes labialis, a high fever, a leucocytosis over 20,000, and generalized rigidity of the abdominal musculature. In the late stages of pneumococcal peritonitis diagnosis puncture may give positive information regarding the infecting organism, but in the early stages it will not.

The author reports eight cases—two in the primary stage, two in the intermediate stage, and four in the third stage. Operation was performed in all. The two patients in the first stage and the two in the second stage succumbed, whereas those operated upon in the last stage, after abscess formation, survived. The author therefore concludes that operation should be performed only in the last stage.

KELLOGG STONE, M.D.

GASTRO-INTESTINAL TRACT

Barkwood, R. A., and Simpson, B. L.: Additional Analysis Following Gastrectomy and Gastrojejunostomy. *Lancet* 932 600B, 302.

The authors briefly review the fifteen cases of additional anemia following gastrectomy or gastrojejunostomy which have been reported in the literature to date and add two new cases. In five cases the condition occurred after total gastrectomy in eight after partial gastrectomy and in four after gastrojejunostomy. In one of those in which it followed gastrojejunostomy it was associated with a gastrojejunocolic fistula. In six cases the operation was performed for carcinoma in seven, for gastric ulcer in one, for duodenal ulcer in one, for both gastric and duodenal ulcer in one, for syphilitic gastritis and in one, for gastric ulcer, for syphilitic gastritis. In no case was there any evidence of malignancy at the time the anemia developed. The period between the operation and the development of the anemia varied from two to fifteen years and averaged six years.

In all but one case the color index was greater than 1.0. In the one exception it was .7. In the latter the condition was first regarded as a secondary anemia, but its rapid response to liver therapy suggested its primary nature. Megaloblasts were present in only five of the seventeen cases.

While there are numerous facts to explain the occurrence of primary anemia after complete removal of gastric tissue, the reasons for the development of the condition after gastrojejunostomy and partial

resection is less obvious. It is probable that after the latter operations hydrochloric acid and ferments are secreted by the remainder of the gastric tissue although, because of neutralization by duodenal contents, free acid may not be demonstrable. Castle stated that the interaction of gastric juice and beef muscle may take place in acid and neutral solutions and that retardation of this reaction in an alkaline solution might explain the anæmia in cases of gastrojejunostomy. However, he found that the incubation of beef with duodenal contents gave good results only if gastric contents were present. The time factor of the interaction may be important, and in some cases rapid emptying of the stomach after partial gastrectomy and gastrojejunostomy may be of significance. Another factor to be considered is the occurrence of postoperative chronic diarrhoea, the mechanism of the anæmia production in cases with this condition probably resembling that of idiopathic steatorrhoea. Another etiological possibility is postoperative gastritis which, in Europe, is thought to be a not-infrequent sequel of gastrojejunostomy and incomplete gastrectomy.

The evidence indicates that Addisonian anæmia is extremely rare after gastrectomy and gastrojejunostomy, whereas secondary anæmia is not uncommon after partial gastrectomy. The fact that the latter is dependent upon the amount of gastric tissue removed is of great significance. In view of the rarity of megaloblasts in postoperative Addisonian anæmia, it is possible that some of the so-called anæmias following operation may be related to the Addisonian variety and may respond to liver therapy.

SAMUEL J. FOGELSON, M.D.

Bancroft, F. W., and Lester, C. W. Postpyloric Ulcer Under the Therapeutic Management of Internist, Radiologist, and Surgeon. *Ann Surg.*, 1932, *xcvi*, 1036.

In an attempt to improve the treatment of duodenal ulcer, the efforts of the internist, surgeon, and roentgenologist were combined and surgery was performed only when it was favored by two of the consultants. The general indications in favor of surgery on the ulcer were (1) failure of adequate medical treatment to cure, and (2) roentgenological evidence of the likelihood of perforation. When recommended by the internist and roentgenologist, surgical removal of foci of infection, such as tonsils, teeth, and the appendix, was done without operation on the ulcer.

This report deals mainly with (1) the results in cases in which the appendix was removed in the presence of symptoms suggestive of postpyloric ulcer with roentgenological evidence of pylorospasm or of ulcer with roentgenological evidence of disease of the appendix or cæcum, and (2) an analysis of the mortality and end-results of operations on the stomach or duodenum for postpyloric ulcer.

In cases of pylorospasm or duodenal ulcer the roentgenological evidence of disease of the appendix was based upon, (1) deformity of the cæcum, (2)

retention of barium longer than one hundred and twenty hours in a fixed appendix, (3) the demonstration of a local point of tenderness over the appendix on manipulation under the fluoroscope, (4) fixation of angulation of the appendix, (5) faecoliths remaining coated with barium five days, and (6) non-filling of the appendix by a barium enema and meal. The last finding was accepted as suggestive, but not conclusive, as the appendix may have filled and emptied between periods of examination. In this connection clinical evidence of localized tenderness was considered in making the diagnosis.

The appendix and other foci of infection were removed in eleven cases of active ulcer, two cases of healed ulcer, and twenty cases of pylorospasm and, when possible, the patients were followed for at least a year.

Of the cases of active ulcer, good results were obtained in five, fair results in two, and poor results in two. Two of the patients with active ulcer could not be traced. In both of the cases of healed ulcer the results were good. Of the total number of cases of ulcer, exclusive of those in which the patient could not be traced, the results were good in 64 per cent, fair in 18 per cent, and poor in 18 per cent. Of the cases of pylorospasm, good results were obtained in eleven and fair results in five. Four of the patients with pylorospasm could not be traced. Of the total number of cases of pylorospasm exclusive of those not traced, good results were obtained in 69 per cent and fair results in 31 per cent.

In twenty-five cases of postpyloric ulcer surgery was performed on the stomach or duodenum. The one patient who was treated by gastro-enterostomy was in excellent condition six months after the operation, but thereafter could not be traced. Of three patients who were subjected to a Judd pyloroplasty, two are in excellent condition, but one still has symptoms of indigestion and pain if he does not regulate his diet carefully. Of four patients subjected to subtotal gastrectomy, one was well at the end of three months but subsequently could not be traced, and the three others are in excellent condition. Of the seventeen patients treated by a modified Devine operation, two were operated upon too recently for judgment of the end-result, one died at the end of a year and a half from intestinal obstruction, one is free from gastric disturbances but is still wearing a T-tube in the common duct, eleven are on non-restricted diets and feel well, and two still have some gas or indigestion if they are careless with their diet.

SAMUEL J. FOGELSON, M.D.

McIver, M. A. Acute Intestinal Obstruction. I. General Considerations. II. Acute Mechanical Obstructions Exclusive of Those Due to Neoplasms and Strangulated External Herniæ. III. Obstruction Due to Neoplasms and Strangulated External Herniæ. *Arch Surg.*, 1932, *xcvi*, 1098.

These articles are based on 335 cases of acute intestinal obstruction treated at the Massachusetts

General Hospital in the period from 1913 to 1927. The cases are divided into the following 3 groups. Group 1: 156 cases of acute mechanical obstruction not due to neoplasms or strangulated external hernia. Group 2: 33 cases of obstruction due to neoplasms. Group 3: 147 cases of obstruction due to strangulated external hernia. The total mortality was 51 per cent.

The relative frequency of the different types of obstruction and their relation to the age of the patient are shown by graphs. In 63 per cent of the cases there was some interference with the mesenteric circulation. In 240 cases the obstruction occurred in the small intestine. In 52 in the large intestine and in 27 in both the small and large intestines. Of the cases in which it was found in the small intestine, it occurred in the jejunum in only 8. This shows the relative infrequency of simple high obstruction. It is in simple high obstruction that brilliant results have been obtained in experimental animals by the administration of large amounts of sodium chloride solution. Similar treatment of animals with low obstruction, the most common type in human beings, has been less successful.

In the 156 cases of Group 1: those of mechanical obstruction not due to neoplasms or strangulated external hernia, the mortality was 44 per cent. A comparison with the mortality in the previous 3 decades at the same institution shows improvement in cases of early postoperative obstructions, obstruction due to Meckel's diverticulum, and strangulated internal hernia. In cases of mesenteric thrombosis, volvulus, late postoperative obstruction, obstruction due to bands and adhesions without a previous operation, intussusception, and congenital anomalies, there has been a slight increase or no change in the mortality.

The author analyzes the clinical and pathological pictures of the various types of obstruction and compares their mortality rates.

In the cases in which operation was performed during the first forty-eight hours, the mortality was 36 per cent. In the rest, it was 60 per cent.

The greater the damage to the bowel, the more marked was the toxemia. In cases showing interference with the mesenteric circulation the mortality was 53 per cent, whereas in those without this complication it was 37 per cent.

The mortality was highest in the cases of patients under one year and over fifty years of age.

The cardinal symptoms were pain, vomiting, and obstipation. The temperature, pulse, and respiratory rates are not likely to be increased early. There may be no leucocytosis. A high white cell count is suggestive of circulatory interference and the necessity for early operation. Abdominal tenderness was present in only 61 of the cases reviewed, and muscle spasm in only 37. Distention is usually present, but may be absent early and, if the obstruction is high, may not be marked even later in the condition. Visible peristalsis was noted in only 22 of the 156

cases. A palpable mass due to a distended loop was recorded in only 8 cases.

The types of anesthesia employed are shown in a table. The use of ethylene has been abandoned because of the danger of explosion.

The type of operation and the mortality of each type are given.

If blood-stained fluid is present, strangulation of the intestine must be sought for. A foul odor indicates extreme damage to the bowel. Of 25 cases with bloody fluid, 21 showed gross interference with the mesenteric blood supply.

Dehydration was relieved by giving physiological salt solution. However the mortality has not been decreased since this treatment has been used. The author attributes this finding to the fact that dehydration, although important in obstruction at any level, is most severe in simple high obstruction.

Low obstructions are most common and are often complicated by interference with the circulation, which is an important factor in the outcome.

In the 33 cases of Group 2, those of obstruction due to neoplasms, the mortality was 51 per cent. The obstruction was caused by both metastatic and primary tumors. In 4 cases it occurred in the small intestine, and in 28 in the large intestine. In 73 per cent of the cases it was in the sigmoid. Sixty per cent of the patients were over sixty years of age. No case of acute obstruction was due to carcinoma of the rectum.

The symptoms of obstruction due to neoplasms are obstipation, pain, distention, and vomiting. They are less fulminating when the obstruction is in the small bowel. In the cases reviewed the average time between the onset of the symptoms and operation was five days. Pain was almost constantly present and was cramp-like. In some cases the discomfort from distention was most marked. Vomiting was not profuse or frequent until late, when it also became fecal. Distention was unusually marked, and visible peristalsis was frequent. The temperature and white cell count was generally normal. Half of the patients had symptoms from ten days to several months before the acute obstruction. These symptoms were increasing constipation, attacks of cramp-like pain in the lower abdomen, and occasionally frequent small bowel movements.

Local and spinal anesthesia were found most satisfactory. The usual treatment was drainage.

In the 147 cases of Group 3, those due to strangulated external hernia, the mortality was 18 per cent. The mortality was highest in the cases of umbilical and ventral hernia. Femoral hernia had a higher mortality than inguinal hernia. One-half of the deaths were those of patients with symptoms of strangulation for more than twenty-four hours. Nearly one-half of the total number of deaths occurred in the 9 cases in which there was bowel necrosis. In these cases the mortality was over 50 per cent. The average age of the patients was forty-four years.

The diagnosis is usually easy, but occasionally the sac may be overlooked if it is small and especially if it is in the femoral canal. In 3 cases of the cases reviewed the diagnosis was not made until laparotomy was performed.

The author emphasizes the importance of local or spinal anesthesia in cases coming to operation late.

ARTHUR L. SHREFFLER, M.D.

McIver, M. A. Acute Intestinal Obstruction
First Installment. *Am J Surg*, 1933, xix, 161

The author briefly reviews the history of the evolution of our knowledge of intestinal obstruction. He objects to the term "adynamic ileus" and in his discussion refers to "mechanical obstructions" and "functional obstructions." He divides functional obstructions into paralytic and spastic obstructions. He states that mechanical obstructions are more common than functional obstructions and in general are more serious. He classifies mechanical obstructions as follows:

- 1 Obstructions by bands and adhesions
 - a. Early after operation
 - b. Late after operation
 - c. Without previous operation
- 2 Obstruction by volvulus
- 3 Obstruction by intussusception
- 4 Obstruction by rarer causes
 - a. Congenital anomalies
 - b. Gall stones and other foreign bodies
 - c. Internal hernia.
 - d. Meckel's diverticulum.
- 5 Obstruction by mesenteric thrombosis and other vascular lesions
- 6 Obstruction by neoplasms
- 7 Obstruction by strangulated external hernia.

Of a series of 335 cases of intestinal obstruction studied in the Massachusetts General Hospital, the obstruction was caused by a strangulated external hernia in 44 per cent and by adhesions in 31 per cent. In 11 per cent of the latter the adhesions were formed early after an operation, in 13 per cent they were formed late after an operation, and in 6 per cent they were formed without a previous operation. In 9 per cent of the total number of cases the obstruction was caused by Meckel's diverticulum, in 5 per cent by intussusception, in 4 per cent by volvulus, in 3 per cent by mesenteric thrombosis, in 2 per cent by gall stones and other foreign bodies, and in 1 per cent each by a congenital anomaly other than Meckel's diverticulum and an internal hernia. As might be expected, most of the obstructions from congenital anomalies and intussusception occurred in infants and children. Obstructions resulting from bands of adhesions in persons not previously operated upon occurred most frequently in the second and third decades of life and old age. Mesenteric thrombosis and obstructions from neoplasms occurred most often in old age. Obstructions from strangulated external hernia were most common in the fifth and sixth decades of life. Intestinal obstruction was more common in males than females.

It is important to determine the condition of the circulation of the bowel and also the level of the obstruction. The circulation of the bowel may be interfered with in the mesentery or in the bowel wall. The greater the interference with the circulation the more severe are the symptoms. In the cases in which there was interference with the blood supply, the mortality was 53 per cent whereas in those without strangulation it was 37 per cent. Interference with the blood supply of the wall of the gut is apt to occur as a result of carcinoma of the sigmoid in which there is marked distention of the gut. It is especially apt to occur in the cæcum, which is most prone to suffer from the effects of the distention. Of 32 cases of obstruction from neoplasms, operation revealed damage from distention, perforation, or beginning necrosis of the cæcum in 4. Even though the damage may not result in infarction and gangrene, there may be sufficient injury to the mucosa of the gut to favor the absorption of intestinal toxins.

Bands of adhesions producing mechanical obstruction may be of various types. They may only occlude the intestine or may produce a strangulation. Bands causing obstruction in persons who have had no previous operation are usually the result of an inflammatory process involving the peritoneum. Tuberculosis, appendicitis, and other peritoneal infections may be the cause. Obstruction caused by bands late after an operation occur most frequently following appendectomy. In 16 of the 45 cases reviewed the obstruction occurred in the first year. The average interval, exclusive of the first year, was six years, and the longest interval twenty-five years. As a rule, such obstructions occur in the small bowel. In only 2 of the 45 cases reviewed were they in the large bowel. In 20 of the 45 cases strangulation was present. In the cases of obstruction by bands of adhesions in which there had been no previous operation the mortality was higher than in the cases of late postoperative obstruction. This was not due to the fact that the diagnosis was made earlier in the latter group. When operation was performed within forty-eight hours, the mortality was 37 per cent in the cases in which there had been no previous operation whereas in the cases in which a previous operation had been performed there was no mortality. As in the cases in which there had been no previous operation the adhesions occurred at a later period of life than in those in which they followed an operation, this fact may account for the difference in the mortality. ALTON OCHSNER, M.D.

Smith, G. K. Congenital Intestinal Occlusion,
with a Report on Five Cases. *Med J Australia*,
1932, ii, 685

The greater part of the author's discussion of the five reported cases (three cases of stenosis and two of atresia) is devoted to the cases of stenosis. In all three, autopsy showed that the starting point of the stenosed segment was in the ileum. In no case was there any manifest stricture in the sense of a fibrous

band, adhesion, or abnormal structure. While the ileocecal valve was patent in each case (from 1 mm. to 0.635 cm. in diameter) the cecum and entire colon were markedly contracted and devoid of contents except dilitus. About the point of contraction the bowel was usually distended, congested, and inflamed. The author believes that these stenoses are attributable to a neuromuscular defect for the following reasons:

1. Histological examination of the bowel wall above, below and at the site of obstruction failed to reveal any abnormality.

2. In two cases, bowel contents were found at a lower level at autopsy than at operation, a fact suggesting that the obstruction could be forced.

3. In one case an enterostomy opening as made in the dilated bowel well above the point of contraction and autopsy forty-one days later showed the ileum to be contracted from the site of the enterostomy downward.

In the absence of any obvious explanation, the author suggests hyperactivity of the autonomic system as a possible cause of the constriction of the bowel.

Some form of hydrostatic distention by means of a catheter introduced through the rectum into the collapsed segment is suggested as treatment in these cases. It is presupposed, of course, that the patency of the bowel has been demonstrated previously at operation.

With regard to cases of atresia the author points out that the condition is not irremediable. While enterostomy to tide the infant over a critical period would seem to be a rational procedure, he considers it significant that there is no record of the survival of any infant upon whom enterostomy has been performed. Therefore the only remedy offering any hope of recovery is immediate entero-anastomosis.

T. BARROW JONES, M.D.

Hubbard, J. S., Swenson, P. G. and Levin, A. G.: Roentgenology of Experimental Mesenteric Vascular Occlusion. *Arch Surg* 1933, 107, 50.

The high mortality of mesenteric vascular occlusion is accounted for by the difficulty in arriving at an early diagnosis of the condition. The physiological effects of the occlusion may be compared in some respects to those of intestinal obstruction. These conditions result in stasis of the intestinal contents, a decrease in the absorption of gas and fluid by the intestinal wall, excretion of fluid into the lumen of the bowel proximal to the affected segment, and hemorrhage and infarction of the involved segment. Although the roentgen demonstration of gas and fluid levels in the small intestine has greatly facilitated the diagnosis of simple intestinal obstruction, attention has not been directed to the fact that a similar roentgen picture is produced in mesenteric vascular occlusion.

The authors report experiments performed on three groups of dogs. All of the animals were operated upon under ether narcosis and with a

strictly sterile technique. As soon as gas shadows and fluid levels could be demonstrated in the roentgenograms, the abdomen was again opened under ether narcosis and the condition of the intestine was observed.

In one of the two dogs of Group 1 the superior mesenteric artery was ligated just distal to the origin of the inferior pancreaticoduodenal artery and in the other the trunk of the superior mesenteric artery was ligated 5 cm. distal to its junction with the aorta. Roentgenograms of these dogs disclosed gas shadows and fluid levels simultaneously after one and a half and four hours respectively. Examination of the intestine at necropsy disclosed numerous areas of discoloration and a mild dilatation.

In the six dogs of Group 2 five procedures were carried out. In Dog 1, the portal vein was ligated 6 cm. from its entrance into the liver. In Dog 2 the tributaries of the superior mesenteric vein from the jejunum, ileum, and cecum were ligated. In Dog 3, one-half of the jejunum and all of the ileum, and in Dog 4, about 1 cm. of the lower ileum were included in the occlusion. In Dogs 5 and 6, the mesenteric veins of the lower 15 cm. of the ileum were occluded by placing a suture through the mesenteric border of the intestine down through the submucosa. In Dogs 1, 2, and 3, no roentgen findings were elicited. This was probably explained by displacement of the gas by extensive hemorrhage into the lumen of the bowel. In Dog 4, because of collateral circulation through the longitudinal branches of the anastomosis, there were no effects from the ligation. In the cases of Dogs 5 and 6 the roentgenograms showed gas shadows and fluid levels after three and five hours respectively.

In the three dogs of Group 3, both the veins and the arteries were occluded. In Dog 1 the mesenteric arteries and veins were ligated to a segment of lower ileum about 40 cm. in length, and in Dogs 2 and 3, the occlusion involved about 5 cm. of the lower ileum. Roentgenograms disclosed gas shadows after two hours and fluid levels after from four to six hours.

This experimental study indicates that it is possible very early to obtain roentgen signs of intestinal obstruction following mesenteric vascular occlusion.

WOMAN C. BOLLOCK, M.D.

Palmbo, R.: A Case of Primary Adenocarcinoma of the Jejunum (Sopra un caso di adenocarcinoma primario del digiuno). *Riforma med* 1932 XI 13, 1304.

Exclusive of rectal polyps, benign tumors of the intestines are rare. They include adenomas, fibromas, lipomas, angeliomas, fibromyomas, and mixed tumors. Only 3 or 4 per cent of the total number occur in the small intestine. In the small intestine malignant tumors are even more rare than benign tumors, and carcinoma is less common than sarcoma.

The case reported by Palmbo was that of a woman forty years of age who had extensive gastric

acidity with eructations and meteorism for which she took purgatives. The first intestinal symptom was diarrhoea lasting for ten days. No blood or mucus was noticed in the stools. A fortnight later the patient was seized with severe mesogastric pain followed by vomiting, which recurred after the ingestion of food and persisted for two months. X-ray examination after a barium meal showed irregularity in the third portion of the duodenum and a marked dilatation of the first part of the jejunum with parallel folds in the bowel shadow and violent peristaltic waves. At the end of an hour the barium had not passed the obstruction, and after three hours only a trace had passed the stenotic area in the jejunum. The patient's husband had died from tuberculosis, but the absence of blood in the stools and the high site of the obstruction seemed to rule out tuberculosis as the cause. The Wassermann test was negative, and no tumor mass could be felt. A diagnosis of carcinoma was made by exclusion.

When the abdomen was opened the jejunum was found dilated to the size of the colon. The dilatation ended abruptly in a constriction which felt very hard and permitted no fluid to pass. The constriction was resected with the glandular infiltration and the intestine united side-to-side. Eleven hours after the operation the patient died.

The resected portion of bowel presented an adenocarcinomatous stricture with a glandular arrangement from proliferation of the mucosal epithelium. The neighboring lymph glands showed only an inflammatory reaction.

KELLOGG SPEED, M D

Black, J M. A Survey of 340 Cases of Acute Appendicitis. *Brit M J*, 1932, 11, 1136

The cases of appendicitis reviewed are divided into 3 groups according to the type of operation performed. Among 15 patients who were ill with acute appendicitis an average of fifteen hours before operation there was 1 fatality. Among 80 patients with acute appendicitis and local peritonitis or abscess formation there were 3 deaths. Among 56 patients with general peritonitis who were treated by appendectomy and suprapubic drainage there were 10 deaths, a mortality of 18.8 per cent. In Groups 2 and 3, comprising 117 cases, more than fifty hours elapsed before the patients' arrival at the hospital. In a large number of these cases the previous administration of castor oil and salts was an important factor in the rapid advance of the symptoms and the spread of the infection. Of the 14 patients who died, 7 had a ruptured pelvic appendix and the average time they were ill before operation was eighty hours. These figures suggest that the pelvic position of the appendix is the most dangerous.

The outstanding feature revealed by pathological study was the frequency of acute obstructive appendicitis. In many cases the obstruction was due to faecal concretions, foreign bodies, fibrous strictures, kinking of the lumen or torsion of the meso-appendix.

Black believes that deaths from general peritonitis are due, not to septicæmia, but to absorption resulting from obstruction of the bowel. Wallace believes that if the bowel can be made to act, the patient will recover, and if it fails to act, he will die.

Among the operative methods used to relieve obstruction were jejunostomy and ileocolostomy. In addition, other measures such as injections of bacillus welchii antitoxin and bile enemata were employed. In 27 cases treated by enterostomy there were 7 deaths, and in 27 treated with bacillus welchii antitoxin there were 8 deaths.

As bile is believed to contain a stimulant to peristalsis, it was employed in amounts of from $\frac{1}{2}$ to 2 oz in 6 oz of saline solution and was given by rectum every four hours. Of the 5 patients treated in this way, all had general peritonitis but all recovered.

JOHN W. NIZUM, M D

Walker, I J. A Comparative Mortality Study of Acute Appendicitis. *New England J Med*, 1933, CCXIII, 113

From a study of the literature and experience at the Boston City Hospital, the author has come to the conclusion that the mortality of appendicitis based on vital statistics has been gradually rising, but that the mortality based on operations for appendicitis has become lower.

He states that calculation of the mortality rate on the basis of vital statistics is not as fair a method of ascertaining the true mortality as the determination of the relationship between the incidence of the disease and the deaths caused by the disease. Up to the present time, the case mortality in appendicitis is best determined from surgical statistics.

It is possible that during recent years a greater number of deaths have resulted from the endeavor to cure appendicitis than formerly. However, the apparently low mortality rate based on vital statistics of twenty years ago was not a true index of the number of deaths due to appendicitis because some of the deaths attributed to peritonitis of unknown origin and to other diseases may have been due primarily to disease of the appendix.

Surgeons should regard appendicitis more seriously and recognize the fact that laparotomy has a definite surgical mortality which, when applied to appendicitis, may account for a considerable percentage of the rising death rate as revealed in the study of vital statistics, but makes little impression in the percentage of deaths incidental to operations for appendicitis.

SAMUEL KAHN, M D

MacLean, A B. The Gastro-Ileal Reflex in Chronic Appendicitis. *Brit M J*, 1932, 10, 1055

The gastro-ileal reflex was first described in 1904 by Sir William MacEwen who observed it in a patient who had had a portion of the lower abdomen and cæcum shot away. The entrance of food into the stomach caused the ileum to eject its contents into the cæcum. In many gastro-intestinal examinations with the use of the barium meal the barium

does not enter the cecum for five or six hours after its ingestion, provided the patient remains fasting, although the head of the meal may reach the ileocecal valve in one or two hours. According to Hurst, ileal stasis is a normal physiological condition of the utmost importance for adequate digestion. It is uncertain how long a meal would remain in the terminal ileum in the fasting condition, but it seems to remain there until the taking of another meal establishes the reflex, when the ileum empties itself in about an hour.

The author reports investigations which he undertook to determine whether the gastro-ileal reflex is subject to normal and pathological variations like other reflex actions. Four hours after a barium meal, the patient was given a light (excitator) meal, and an hour later i. e., five hours after the ingestion of the barium he was examined. The examination showed that nearly all of the barium had entered the cecum.

When the reflex was inhibited, no barium was found in the cecum an hour after the excitator meal. It is difficult to say whether the reflex is ever exaggerated. When it was only partially inhibited, only a half or a third of the barium had left the ileum. In some cases the head of the meal had reached the rectum. In others, part of the meal had reached the ileac colon, but much of it was still in the ileum. As proved by operation, chronic appendicitis gives rise to the same conditions. The author therefore regards total or partial inhibition of the reflex as a reliable sign of disease of the appendix provided the patient has gastric or duodenal symptoms. The test has proved of most value in appendicular dyspepsia.

In the absence of gastric and duodenal ulcer the presence of barium residues in the stomach after five hours is a good indication of disease of the appendix and commonly accompanies inhibition of the gastro-ileal reflex. Pylorospasm is seen usually in persons under twenty years of age who are suffering from chronic appendicitis. The duodenal deformities occurring in chronic appendicitis resemble duodenal ulcers and are another indication of the close nervous relationship between the pylorus, duodenum, terminal ileum, and ileocecal valve.

Inhibition of the gastro-ileal reflex appears to be due to spasm of the ileocecal valve and not to kinks, bands, or adhesions. The spasm is apparently brought about by the local irritation of chronic appendicitis. Unfortunately the reflex is not inhibited in all cases and in a considerable number it is probably normal.

Three hundred cases have been examined and 40 cases have been operated upon. In the 40 cases operated upon, chronic disease of the appendix was found at operation. In 21 cases, little or no barium had entered the cecum, whereas in 19, all or practically all of the barium was in the cecum. The author therefore concludes that about one-half of the cases of chronic appendicitis show ileal stasis

due to spasm of the ileocecal valve brought about by irritation of the diseased appendix.

CHARLES C. KERN, M.D.

Bernardo, R., and Bernardo, A.: The Cutaneous or Genitoperineorectal Type of Carcinoma Angiosarcoma of the Rectum (Sur une forme particulière d'angiosarcome du cancer du rectum: l'angiosarcome cutanéopérinéorectal ou genitoperinéorectal). *Presse méd. Par.* 33: 21, 1930.

The authors report two cases of multiple angiomas of the rectum and anus with bluish angiomas of the perineum, scrotum, and penis and review similar cases reported in the literature. They also cite cases in which fatal hemorrhage occurred from an angioma of the rectum and sigmoid without associated external tumors.

The cardinal symptoms of angiomas of the rectum are hemorrhage, prolapse of the tumor masses, and painful crises.

The tumors are most often confused with hemorrhoids, ulcers, and cancer of the rectum. Physical examination may reveal the nature of the lesion, particularly if there are angiomas of the perineum or genitalia, but examination with the rectoscope should not be neglected. Roentgenographic examination may add confirmatory evidence.

Because of the gravity of the condition, surgical treatment should be advised, although resection may be difficult and not without danger. Irradiation may be of value alone or in conjunction with other measures. For hemorrhage the authors advise rest, opiate, calcium chloride transfusion, and the local application of tampons saturated with a hemostatic solution. The anemia should be treated by the usual approved methods.

ALAN W. POOLE, M.D.

Pettinart, V.: The Surgical Treatment of Cancer of the Rectum (El tratamiento quirúrgico del cáncer del recto). *Clin.* 7 feb. 1932, xvii, 25.

The author believes that the classification of carcinomata of the rectum based on the anatomy of the rectum is the most practical. He divides the rectum into the perineal and pelvic portions. The main part of the pelvic portion is the rectal ampulla which measures approximately 15 cm. and extends from the third sacral vertebra to the levator ani insertion on the rectum.

Carcinomata of the rectal ampulla constitute two-thirds of rectal carcinomata. In 75 per cent of the cases the anterior rectal wall is involved.

Carcinomata of the rectal ampulla is the most operable of rectal carcinomata. It infiltrates comparatively slowly.

The author calls attention to the relative frequency of secondary benign tumors accompanying rectal carcinomata.

With an initial small carcinomatous lesion in the rectum there may be a very diffuse metastasis. The author advises the most radical operative removal of the perirectal tissues.

The most common types of rectal carcinoma are the adenocarcinoma, infiltrating squamous carcinoma, fibrous carcinoma, and gelatinous or colloid carcinoma. The prognosis is most favorable in adenocarcinoma.

The author describes the technique he uses in the radical perineal resection of the rectum, the modification of the classical method suggested by Rossi. The modification consists in not reconstructing the perineal layers, but leaving the wound open and draining it freely. The sigmoid is usually left ligated for twenty-four hours and sometimes longer. Twenty-four hours after the operation irrigation is done with Dakin's solution. The routine formation of an artificial anus as in the Lockhart-Mummery operation is regarded by Pettinari as of no value except in cases of marked stenosis with symptoms of complete obstruction. Pettinari prefers the perineal to the iliac opening.

Attention is called to the fact that one of the chief symptoms of carcinoma of the rectum is obstinate diarrhoea.

Pettinari warns against forceful barium enemata for roentgen visualization as they may obscure a tumor which could be seen with an enema given under moderate pressure. An illustrative roentgenogram is shown.

Pettinari disagrees with Brulev who regards irradiation as the treatment of choice for rectal carcinomata. He considers radium irradiation of value as accessory treatment and for cases which are inoperable.

In one of the author's cases a marked prolapse occurred six years after perineal amputation of the rectum, but was operated upon successfully.

F J DE PRUME, M D

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Morhardt, P E. Hepatosplenography (L'hépatosplénographie). *Presse méd*, Par, 1932, xl, 1695.

Morhardt discusses the efforts being made to obtain satisfactory X-ray shadows of the liver and spleen by the method of Radt, which consists in the intravenous injection of thorotrast, a preparation with a 25 per cent content of metallic thorium (thorium dioxide). This diagnostic method is being used to avoid the poorly defined shadows previously obtained by gastrocolic insufflation and pneumoperitoneum.

It is recommended that the initial dose be not more than 10 ctgm per kilogram of body weight as this will allow an estimation of the patient's tolerance. Subsequent doses of from 30 to 40 ctgm per kilogram of body weight may then be given. The total dose should not exceed 75 ctgm per kilogram of body weight. The thorotrast should be diluted in nine times its volume of 5 per cent glucose solution and given very slowly at body temperature.

The immediate effect of the injection is very slight, but when large doses are given they may be

followed later by signs of intolerance such as headache, chills, vertigo, elevation of the temperature, oedema of the glottis, urticaria, and diarrhoea. These can be prevented by giving divided doses with care.

It is found that the thorium leaves the blood very rapidly, as a few minutes after the injection slight shadows of the kidneys and other organs can be seen. However, in a short time most of it is fixed in the liver and spleen. Its elimination is extremely slow. In animals, shadows can be obtained as long as two years after the injection.

Histological studies demonstrate that the thorium accumulates in the cells of the reticulo-endothelial system with a few scattered crystals in the hepatic cells, the splenic pulp, and the malpighian corpuscles.

There is considerable discussion as to whether thorotrast has a stimulating or a depressing effect on the reticulo-endothelial system, but apparently dosage plays a part in the variation of the results. In diffuse affections of the liver and spleen, icterus, advanced cirrhosis, leukæmia, hæmorrhagic states, infections, and asthma, the injection may be attended by special danger.

In physiology, observations have been made by this method with regard to changes occurring in the spleen following the administration of adrenalin and ephedrin and the changes of volume in the right lobe of the liver under the influence of fever, heat, cold, adrenalin, histamin, avertin, and carbon dioxide. The procedure has been used also to define the placental outline in pregnant mice.

In pathology, the method shows the outline of cysts and hæmangiomata of the liver and spleen, and makes it possible to differentiate calcified subphrenic abscess and affections of the pancreas. Absence of a shadow may occur in advanced cirrhosis, neoplastic infiltration, and leukæmia.

In the cases of young and seriously ill persons, the method has disadvantages, but in the cases of aged persons it is particularly useful to obviate exploratory laparotomy. With further progress and observations as to dosage and indications, it promises to become of importance in diagnosis as well as in physiology and functional anatomy.

A bibliography is appended.

MARSH W POOLE, M D

Pascale, G, and Chiarello, A G. Chronic Hepatitis Including the Cirrhotics (Le epatite croniche comprese le cirrosi). *Riforma med*, 1932, xlviii, 1606.

The authors call attention to the importance of the many different tests which may be used in the differential diagnosis of jaundice. They state however, that in spite of these tests, exploration is often necessary to determine the cause of jaundice. Not infrequently, stones and other obvious causes of obstruction are absent. Under such circumstances biopsy often reveals a characteristic interstitial hepatitis with profound changes in the parenchymatous and Kupffer cells. The question

then arises whether the hepatitis or an obstructive cholecystitis was the primary lesion. Regardless of the nature of the primary lesion, drainage has proved of value in the large majority of such cases. The cholecystostomy probably relieves the back-pressure of the bile and the subsequent degeneration of the liver. The authors report cures in about 50 per cent of cases of acute yellow atrophy in which drainage was established.

In the surgery of hepatic cirrhosis progress has been exceedingly slow. The Talmi-Morison operation and its modifications to relieve the portal circulation have proved of some benefit, especially when they have been performed early but as a rule they are done too late. Splenectomy has not proved of advantage in portal cirrhosis. Vein anastomoses have been beneficial when peripheral veins have been used. Ligation of the hepatic veins to diminish the blood supply to the liver has been suggested by Kroyghlan to reduce the proliferation of the connective tissue.

The authors review briefly the so-called hepatosplenic syndrome and other types of cirrhosis to which surgery has been applied.

A. Lotus Ross, M.D.

Simon, J.: *Pyopneumocholecystitis and its Roentgenological Diagnosis* (La pyopneumocholecystite son diagnostic radiologique) *Presse med. Par.* 1935, 21, 1934.

Pyopneumocholecystitis or *gangrenous cholecystitis* with gas in quantity is uncommon, and from a survey of the literature the author concludes that its roentgenographic image has not been described heretofore. A case similar to the case herewith described by Simon was reported by Kirchmayer but in Kirchmayer's case no roentgenological examination was made.

The author's patient was a man thirty-two years of age. In February 1930, he was operated on for peptic ulcer of the stomach. A typical resection of the stomach was followed by recovery in ten days. In the beginning of November 1930, after chilling, the patient began to suffer intense and acute pains in the right hypochondrium. When these pains increased and vomiting began he was taken to the clinic.

Clinical examination revealed a muscular contraction in the hepatic region. Palpation was very painful, but disclosed no pathological resistance. The Blumberg sign was positive. The temperature was 39.5 degrees C., and the pulse 120. The patient stated that from the beginning of the illness he had had intense pain in the right shoulder. The phrenic nerve was painful on palpation, and the right pupil was larger than the left.

The clinical diagnosis of acute cholecystitis was uncertain as it was possible that a subperitoneal abscess had developed after the gastric resection. Roentgenoscopic examination revealed a subhepatic hydro-atrik lounge, the size, shape, and localization of which suggested a distended gall bladder. In the

roentgenogram this was clearly seen to be the gall bladder filled with gas and fluid. The gas was not only in the lumen of the gall bladder, but also in its wall, which was entirely impregnated and showed a very clear outline at the bottom of the fluid.

Examination of the digestive tract showed the typical picture of a resected stomach, the anastomosis, and the entire small intestine. There was no evidence of disease. The large intestine, examined by means of a barium enema, presented no abnormality except a slight depression in the region of the gall bladder which, on this occasion, was visible without fluid and not at its normal level because the roentgenogram was taken with the patient in dorsal decubitus with the ampulla below.

As no abnormal communication between the intestine and the gall bladder could be discovered, the roentgenological diagnosis was *pyopneumocholecystitis* resulting from acute gangrenous cholecystitis with gas in quantity. The most important sign was the infiltration of the gall-bladder wall by gas.

The next day another roentgenological examination was made as the patient's condition was improved and operation did not seem urgent. On this occasion the remains of the opaque masses could be seen between the entirely normal folds of the mucosa. Gas was still present in the lumen of the gall bladder, the size of which had continued to increase. The gaseous infiltration of the wall of the gall bladder was more extensive, penetrating into the subserous connective tissue of the neck of the gall bladder.

Clinical improvement permitted another roentgen examination five days after the first one. The infiltration of the gall-bladder wall was still more marked. The wall was found partially destroyed with the formation of more or less thick flaps. Here and there the mucosa and even the whole wall were absent. Operation was then considered urgent.

When the peritoneal cavity was opened by the typical incision for cholecystectomy, gas escaped and purulent biliary fluid with a fetid odor flowed out. Cholecystectomy was performed. The patient recovered in nineteen days.

The diagnosis based on histological examination was gangrenous cholecystitis and cholelithiasis. Bacteriological examination showed sporadic anaerobes in the fluid from the peritoneal cavity as well as in that from the gall bladder.

With regard to the origin of the infection of the biliary ducts the author states that without doubt the conditions which favored the development of these anaerobes and allowed them to become pathogenic were prepared in advance by the thickness or the chronic infectious changes of an enteropathic syndrome.

PAGE

Kirchmayer, B. K.: *Cholecystographic Diagnosis of Neoplasms of the Gall Bladder* *Am. J. Roentgenol.* 9:11, 1932, 8.

Most cases of cholecystic disease are comprised in the designation "chronic cholecystitis," and despite

variation in their causes, produce fairly uniform clinical, roentgenological, and pathological manifestations. Cholecystography, upon which most reliance is placed in roentgenological investigation of the gall bladder, is primarily a test of function. When sufficient function is maintained to produce a shadow of the cholecystographic compound, the examination becomes comparable to that of the stomach and duodenum with the opaque meal. By this method hour-glass deformity and certain anomalies such as incisura, diverticulum, and double gall bladder can be shown.

Of more than 17,000 gall bladders surgically removed at the Mayo Clinic, papillomata were found in 8.5 per cent. Adenomata, fibromata, myomata, and mixed varieties of tumors are also encountered. Of the malignant growths, sarcomata are extremely rare, but statistics indicate that carcinomata of the gall bladder constitute from 5 to 7 per cent of all carcinomata found at autopsy.

In 51 cases the diagnosis of papilloma was made. Fifteen of the patients have been operated on, not merely because of the roentgenological diagnosis, but also because of the clinical features. In 14 cases the diagnosis was confirmed. In 1 case, only small cholesterol stones were found.

Many of the cholecystographic manifestations of papillomata may be imitated by those of small cholesterol gall stones. However, gall stones usually change their situation and tend to become grouped closely as the gall bladder contracts, as a rule they are faceted and angular in outline. They often have a dense deposit of calcium on their surface, and are less clearly translucent than papillomata.

Kirklin studied also other benign tumors of the gall bladder. In the five years from 1927 to 1931 inclusive, 71 proved cases of benign tumor of the gall bladder other than papilloma were seen at the Mayo Clinic. Of 47 cases of adenoma examined by cholecystography, the gall bladder was revealed by a dye shadow of normal density in 23 and by a faint shadow in 9.

In the diagnosis, the size, form, situation, translucency, and number of defects were considered in the light of the morbid anatomy of benign tumors, especially adenomata. With the exception of the number of defects, all of these factors varied with the angle of roentgenography.

Because they are small, adenomata are seen to best advantage and often are visible only at the twentieth hour, when the gall bladder is well contracted. Their differentiation from cholesterol stones and papillomata may be difficult.

Sarcomata of the gall bladder are unusual. Before the use of cholecystography only 1 proved case of lymphosarcoma was seen at the Mayo Clinic.

Primary carcinoma of the gall bladder occurs chiefly in women. Like carcinoma elsewhere, it occurs most frequently in the later decades of life. Of more than 200 cases of primary carcinoma of the gall bladder operated upon at the Mayo Clinic, gall stones were found in 65 per cent.

From the standpoint of morbid anatomy, the similarity of carcinoma of the gall bladder to carcinoma of the stomach is striking. Therefore it is reasonable to expect that on examination with opaque media the roentgenological manifestations of carcinoma of the gall bladder will be entirely comparable to those of gastric carcinoma.

In the five-year period from 1927 to 1931, 61 primary carcinomata of the gall bladder were found at operation at the Mayo Clinic. Only 16 of the patients had a cholecystographic examination. In 1 case the shadow of the gall bladder was of normal density and apparently free from defects. In another, normal function was preserved, but multiple stones were exhibited. In the remaining 14 cases no shadow of the gall bladder appeared although gall stones were manifest in 7.

In conclusion the author states that while the material presented in this article is too small to warrant absolutely positive deductions, it appears that in cases of uncomplicated gall stones not only the demonstration but also the diagnosis of papilloma and adenoma is often possible. Occasionally even the demonstration and identification of carcinoma are possible. Therefore when the examiner observes a defect with a diameter of more than 2 cm and an irregular internal border he should not fail to take carcinoma into consideration. Such findings are most likely to be made in the course of cholecystography performed routinely regardless of the clinical history, for after the development of marked symptoms the carcinomatous gall bladder is almost never visualized with the dye.

Schmieden, V., and Niessen, H. Diseases of Stone-Free Extrahepatic Bile Ducts (Die Erkrankungen der steinfreien extrahepatischen Gallenwege). *Verhandl. d. deutsch. Gesellsch. f. innere Med.*, 1932, p. 302.

Schmieden discusses bile stasis, the "stasis gall bladder," and white bile. He states that in the extrahepatic system there occur slight or transitory disturbances which may be considered as compensatory stasis. They do not cause backing up of bile into the blood, but may be the beginning of subsequent serious diseases.

Schmieden first discussed his conception of the stasis gall bladder, which he considers a functional disturbance and a not entirely aseptic precursor of stone formation. In addition to mechanical factors, dysfunctional states of the entire duct system may be responsible for delay in the transportation of the bile and acute obstruction (pseudo-stone attacks). It is incorrect to identify the stasis gall bladder with beginning inflammation, just as it is incorrect to regard the affected patient as a vagotomic neurotic. The so-called "papillary," or "strawberry-" gall bladder has recently been considered a forerunner of stone formation. Schmieden warns against indiscriminate removal of the gall bladder as this organ is by no means a dispensable or rudimentary structure. According to Aschoff, it is rather to be

considered the pressure regulator of the extrahepatic bile system. By means of the duodenal tube and cholecystography the active function of the gall bladder in certain phases has now been proved. In spite of our knowledge of the sphincter of Oddi, the sphincter of the cystic duct and the active participation of the gall bladder itself the emptying mechanism of the extrahepatic bile ducts still presents many problems. The author refers to the clinical picture of dyskinesia of the gall bladder described by Westphal, which is attributed to malfunction of the sphincter of Oddi, and to Schoenleube's assumed causes thereof: disturbances of the psychic, of the internal secretions, or of the sympathetic nervous system. Undoubtedly all of these processes may be considered the beginning of cholelithiasis.

Schmieden emphasizes that he distinguishes spastic occlusion of the cystic duct from that of the sphincter of Oddi, and does not consider the former uncommon. One must assume that both types, isolated cystic duct occlusion and common duct occlusion, may occur separately but they may occur also in combination. Cholecystectomy as treatment for painful bile stasis has been abandoned. If the occurrence of spastic colics in the common duct is proved, the surgeon should carefully dilate the ampulla through a choledochotomy proceeding gradually and cautiously. Rapid, violent dilatation may be followed by recurrence and cicatrization. The first aim of medical treatment should be to cure beginning cases of "spastic cholepathy" before secondary anatomical changes occur. This may require a very individualized attack. In closing his discussion of bile stasis, Schmieden points out that the end stages of this condition with jaundice from long-standing occlusion are still referred to the surgeon too late. In *icterus gravis*, even in the absence of other alarming symptoms, the maximal period of permissible delay is three weeks.

White bile is not related to true bile. It is a mucus produced by the bile ducts when, as the result of occlusion of the cystic duct or ampulla with loss of the absorbing power of the gall bladder the mucus from the gall bladder cannot be absorbed. In the treatment, only relief of the obstruction may be considered (sidetracking to the outside the formation of an internal fistula, the removal of an occluding stone or the radical extirpation of a tumor).

Of the malformations and anomalies, total absence of the gall bladder is not very common but is seen occasionally. True reduplication of the gall bladder is very rare in man, whereas direct communications between the gall bladder and the intrahepatic bile ducts are relatively common. The "parenchymal bladder" embedded in the liver is of less clinical importance than the freely movable wandering or pendulous gall bladder which may give rise to intermittent bile obstruction or to torsion. Finally reference is made to congenital dilatation of the common duct and abnormalities in the lower portion of that duct.

After removal of the gall bladder there is no true regeneration. From a long cystic duct stump there may be formed a structure resembling a gall bladder which may readily become the source of various types of disturbances. Therefore this duct should be carefully dissected and removed close to the common duct. After removal of the pressure regulator there is an adaptation by the duct system. At first the tone of the sphincter of Oddi becomes decreased, but later it increases again and causes resumption of rhythmic evacuation. Extirpation of the gall bladder is followed by a dilatation of the common duct which should not be mistaken for a diseased condition of the duct. Occasionally Schmieden has seen severe postoperative disturbances which suggest inadequate adaptability and persistence of the dyskinesia (spasmophilia) of the sphincter of Oddi. When medical treatment fails, these disturbances may require surgical dilatation of the ampulla. Today it is as necessary to warn against removal of the gall bladder in the absence of indications for it, as formerly it was necessary to warn against needless gastro-enterostomy. At every cholecystectomy it should be remembered that accessory bile ducts running from the liver bed to the gall bladder are not infrequent, and that therefore routine closure of the abdomen without drainage is inadvisable. Of the internal biliary fistulae Schmieden prefers cholecystogastrostomy. In dilating the ampulla a technically correct dilatation up to a No. 24 to 30 Charrière sound gives the best results. For the correction of defects in the common ducts the Goetze duodenal lappest plastic operation is recommended. For biliary fistulae, reoperation (changing the external fistula into an internal one) is suggested.

Because of the protected position of the bile ducts, injuries of these ducts are relatively infrequent. In addition to open injuries, subcutaneous injuries play a particular rôle. The clinical picture and the differential diagnosis are discussed briefly, and it is emphasized that treatment can be only surgical. The primary objects must be to assure the outflow of bile into the bowel and prevent an intraperitoneal accumulation of bile. In the most severe cases the surgeon must be satisfied to deflect the bile to the outside and delay the final correction until the general condition has improved.

The gall bladder is involved most frequently by tumors. In the common duct the most common site of tumors is the ampulla. The frequency of simultaneous stones and carcinomas (in the literature as high as 94 per cent) is mentioned. Early operation for gall stones may prevent carcinomas to a certain extent. Papillomata of the gall bladder and the ducts may simulate stone colic. They may also be the cause of dyskinesia. Therefore if medical treatment fails, operation should be performed because papillomata are precancerous. Carcinomata of the bile ducts are not particularly malignant and grow slowly. Accordingly their early recognition is important.

Among the parasitic diseases those due to echinococci and ascarides are briefly described. After referring to the control of cholæmia by calcium preparations and particularly by blood transfusion, Schmieden emphasizes that too protracted conservative treatment is dangerous. If conservative treatment does not produce a satisfactory result or clarify the clinical picture in a reasonable time, an early exploratory laparotomy is definitely indicated.

COLMEES (Z)

Mushin, M. Urinary Diastase in Acute Pancreatitis. *Australian & New Zealand J Surg*, 1932, 11, 133

The usual tests for the detection of pancreatic insufficiency are concerned with mydrasis, changes in the feces, and changes in the urine. The results of Loewe's mydratic tests were found inconstant and inconclusive. Examination of the feces was abandoned because of the elaborate technique involved. Examination of the urine for diastase gives constant results in a minimal length of time.

In the urinary diastase test performed in the cases reviewed by the author, 1 c.cm. of normal saline solution was added to each of 5 or more numbered test tubes. To the first tube 1 c.cm. of urine was then added. One cubic centimeter of this diluted specimen was then added to the second test tube and so on down the series. This resulted in urine dilutions of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, and so forth. To each test tube 2 c.cm. of a 0.1 per cent starch solution were next added. All of the test tubes were then placed in an incubator at 37 degrees C for thirty minutes. At the end of that time cold water was added to each to retard further digestion. This was followed by a few drops of tincture of iodine. The end-point of the test was shown by a reddish-brown color immediately preceding the test tube in which a bluish discoloration was present. The result was calculated in Wohlgemuth units of diastase. A Wohlgemuth unit of diastase is the number of cubic centimeters of a 0.1 per cent starch solution which are digested by 1 c.cm. of urine in thirty minutes at a temperature of 37 degrees C.

In a series of 140 patients with either a medical or a surgical condition unrelated to the biliary ducts the diastase content of the urine ranged between 2 and 32 units. In the majority it averaged 10 units.

Of 2 patients with symptoms suggesting acute pancreatitis but with a normal diastase content in the urine, one had a perforated gangrenous gall bladder and the other a ruptured amoebic abscess of the liver. Of 26 patients with proved pancreatitis whose urine was examined for Wohlgemuth units of diastase, all except 1 showed a diastase value between 50 and 4,100 units. Values under 100 units were found in the cases of only 27 per cent.

In experiments on dogs and cats there was a constant increase in the urinary diastase following the experimental production of acute pancreatitis.

The diastase reading was found to have no relation to the immediate prognosis of acute pancreatitis.

After the initial high figure the amount of urinary diastase usually fell to normal by about the third or fourth day after operation. Cases in which decompression of the biliary tract was incomplete or deferred showed a definite lag in the progressive decrease. Accordingly there seems to be a relationship between the degree of biliary decompression and the urinary diastase index.

In 7 cases the diastase index of the peritoneal fluid was about half that of the urine.

In spite of the occasional report of a case of acute pancreatitis with a normal urinary diastase content, the author believes that whenever 50 or more Wohlgemuth units are found in the urine a provisional diagnosis of acute pancreatitis will be confirmed at operation.

J. EDWIN KIRKPATRICK, M.D.

Benedetti-Valentini, F. Pentastomiasis of the Spleen (Pentastomiasis splenica). *Ann Ital di chir*, 1932, 21, 1085.

The author reports a case of pentastomiasis of the spleen which he believes to be the first in which the pentastoma produced, in the human body, lesions and subjective disturbances leading to exploratory laparotomy followed by ablation of the diseased organ.

The patient was a girl sixteen years of age who, at the age of seven years, had suffered from abdominal pain on the left side which was often accompanied by nausea and vomiting. Later she suffered from bronchitis and urinary frequency with the excretion of turbid urine. Forty days before her admission to the hospital she had an attack of abdominal pain which was attributed to acute appendicitis. Operation was delayed, but finally a slightly inflamed appendix was removed. The wound healed normally. Soon after the operation recurring pain began in the left side of the abdomen. Examination of the urine revealed only a few leucocytes and a trace of albumin. These disappeared under treatment with urinary antiseptics. Throughout the time the patient was in the hospital a daily evening rise in the temperature was noted. The spleen was palpable one fingerbreadth below the costal margin. Its upper limit of dullness extended to the seventh interspace and the midaxillary line. A skin test with Koch's old tuberculin was + +. No evidence of tuberculosis was found in the urinary tract. The erythrocyte count was 4,200,000 and the leucocyte count 10,000. The hæmoglobin was 70 per cent.

X-ray examination of the abdomen disclosed a group of small shadows which, after the induction of pneumoperitoneum, were demonstrated to lie in the spleen. As the patient's brother and father had been tuberculous, a diagnosis of tuberculosis of the spleen was made.

At exploratory operation the spleen was found to be the only organ affected. Splenectomy was done. No perisplenitis was found, but beneath the capsule of the spleen were multiple small white nodules. Complete recovery followed the operation.

The spleen weighed 185 gm. and measured 12 by 7.5 by 3 cm. It was a rose-purple. It contained many white, round, miliumy bodies, some of which were soft and others calcified. The calcified bodies were the calcified larvae of pentastoma denticulatum of linguatula rhinaria canis.

The article is concluded with a discussion of the life history morphology and classification of the arthropods and a review of the literature on the methods of human infection and the abdominal extension of the infection. KULLOOS SPRING MD

MISCELLANEOUS

Morger and Lauret: Congenital Diaphragmatic Hernia. A Contribution to Their Pathological and Clinical Study (Hernies diaphragmatiques congénitales. Contribution à leur étude pathologique et clinique). *Graef. et alib.* 1931 xxv, 399.

Congenital diaphragmatic hernia with a sac should be classified separately from those without a sac.

With regard to those without a sac, the embryonic hernia, there are two theories. According to one theory these hernia are due to anomalies occurring very early (probably before the second month) in the situation of the digestive viscera and causing secondary anomalies of the diaphragm the extent of which is determined by the more or less large size of the ectopic viscera (the old theory of Cruchet). According to the other theory the anomaly which is always early is a primary defect in the diaphragm with secondary involvement of the viscera after the establishment of respiration.

The hernia with a sac, which develop later and are much less frequent, are true fetal hernia produced by the usual mechanism of hernia formation—engagement of the viscera through a space where the muscle is not developed. In such hernia the diaphragmatic malformation is evidently primary.

Clinically congenital diaphragmatic hernia may be divided into the following three groups:

1. Hernia which are immediately fatal. These can be diagnosed clinically before death and are the hernia seen by the obstetrician.

2. Delayed hernia. These also are serious, but are rare. They are recognized in the first months of life. Surgical intervention is indicated only rarely. These hernia are found by the pediatrician.

3. Latent hernia discovered late. A clinical diagnosis is impossible. Roentgen-ray examination is essential for recognition of the condition and for the determination of the operative conditions. The decision to operate should be made with the same care as in cases of traumatic hernia.

Séznec, J., and Gossel, J.: Operative Indications in the Acute Abdominal Syndrome in the Course of Purpura (Les indications opératoires dans le syndrome abdominal aigu au cours du purpura). *Presse méd.* Par 1931, 41, 85.

The authors reviewed 145 cases of purpura with an acute abdominal syndrome which have been

reported in the literature. They included in their study only cases in which the syndrome developed in the course of purpura regarded as primary—falsifying purpura, in the course of which abdominal disturbances are very rare. Rheumatoid purpura, the type most frequently described, and chronic purpura, which in France is regarded as hematogenic.

The syndrome developed in two-thirds of the cases of purpura in males and one-third of the cases in females.

Eighty-nine of the 145 patients were between the ages of five and twenty years. In the cases of infants the rarity of purpura in the very young is of importance in the differential diagnosis.

The purpuric syndromes seem in general to be of spontaneous or infectious origin, but in one case reviewed by the authors purpura complicated by abdominal pain and vomiting was due apparently to a traumatic cause, the resection of a large hematoma. In this connection the authors cite the fact that Silbermann was able to produce purpura in dogs by injecting filtered antigenous blood.

Preceding or following the cutaneous eruption, purpura may appear in the region of the intestines in the form of spots disseminated on the parietal peritoneum, the intestinal suberosa, or the mucosa, or in the form of confluent spots leading to the formation of a hematoma. The hematoma may act as a foreign body disturb peristalsis, and bring about invagination which may go on to perforation.

The acute abdominal syndrome is a triad consisting of pain, vomiting, and melena. The most constant of these symptoms is pain. Pain occurred in 143 of the 145 cases reviewed, vomiting in 130, and melena in 110. In 28 cases palpation revealed an abdominal tumor. On the basis of the symptoms, the cases may be divided into the following 4 groups.

Group 1: the typical painful abdominal syndrome. Among the cases reviewed there were 10 of this type. In the typical case an adolescent, usually a boy developed arthritis of the knee or the tibio-tarsal or radio-carpal joints without any preceding symptoms. Slight swelling was often noted. At the end of several hours or days the eruption appeared on the limbs, chiefly on the flexor surfaces, and the diagnosis of rheumatoid purpura was made. The eruption often extended to the abdominal wall and the genital organs. In some cases it became generalized. Then suddenly severe abdominal pains of the colic type developed. These were accompanied by reflex vomiting. In the following hours bloody stools were passed. Palpation usually revealed pain which was generally periumbilical or in the right iliac fossa. In some cases, in the absence of complications, a tumor suggesting intestinal invagination, could be perceived in one of the iliac fossae. The temperature was generally below normal (about 38 degrees C.) and the pulse about 100. The blood often showed a hyperleucocytosis with a polymorphonuclear. Under treatment with diet, opiates, and the application of an ice bag to the abdomen these phenomena usually yielded. However in the follow

ing days, recurrence was the rule. Sometimes there were as many as 10 attacks. The painful abdominal syndrome with successive attacks must be considered the most typical form.

Group 2, the acute painful abdominal syndrome and peritoneal purpura, appendicular type. When the cutaneous eruption is lacking, when there is pain in the periumbilical region and the right iliac fossa, when there is vomiting without bloody stools, and when there is stoppage of gas with sensitiveness to pressure in the appendicular region, the diagnosis of appendicitis is apt to be made and operation advised. In the cases reviewed by the author there were 10 operations for appendicitis or peritoneal purpura. Some contend that there are cases of purpuric appendicitis.

Group 3, the acute painful abdominal syndrome with intestinal invaginations. When the symptomatic triad consists of pain, vomiting, and bloody stools, the difficulty of differentiating between purpura and invagination is apparent, especially as peri-intestinal hæmatoma may be complicated by true invagination. An abdominal tumor was noted in 18 of the 115 cases reviewed, but invagination was found at operation in only 8 of the 18. Therefore this sign is only of relative value. The administration of a barium enema under the fluoroscope will aid in determining whether invagination complicates the abdominal purpura. Of 16 cases of known invagination occurring in the course of purpura, the invagination was limited to the small intestine in 5.

Thirteen of the sixteen patients were operated upon. Of the 3 who were not operated upon, 2 died and 1 recovered. Of the 13 who were operated upon, 7 recovered and 6 died. The postoperative prognosis is darkened by the chance of recurrence.

Group 4, acute purpuric, painful abdominal syndrome and intestinal perforation. In certain cases the intestinal purpuric spots may develop toward gangrene and perforation. In the cases reviewed they were sometimes solitary and sometimes disseminated. They were located on the duodenum, the small intestine, the colon, or the stomach. Eight patients died. Fiolle's patient who had a perforation of the small intestine in the course of a hæmatogenic purpura and was treated by intestinal resection was the only one to recover.

Of the 145 cases reviewed, 105 were mild and not operated upon. In the latter there were 13 deaths, a mortality of 12.1 per cent. In 40 cases operated upon, there were 10 deaths, a mortality of 25 per cent. The higher mortality in the latter group may have been due to the severity of the cases, which included 10 of appendicitis, 15 of simple parietal hæmorrhages, and 15 of invaginations or perforations.

In conclusion the authors state that while the surgeon may be inclined to operate in order to prevent non-recognition of gangrenous appendicitis, invagination, or perforation, the number of purely exploratory laparotomies should be reduced as much as possible.

PAGE.

GYNECOLOGY

UTERUS

Koster, H.: On the Supports of the Uterus. *Am. J. Obst. & Gynec.*, 1933, xiv, 67

The author states that the name "ligament" applied to any structure existing in the base of the broad ligament, surrounding or near the uterine vessels, and extending from the cervix out to the lateral pelvic wall is a misnomer and misleading. The uterus cannot depend for support on the structures designated as the "Mackenrodt," "cardinal," "utero-pelvic," and "infundibulopelvic" ligaments any more than it can depend for support on any or all of the tissues to which it is attached. The explanation of the development of prolapse and its cure can no longer include a consideration of these so-called ligaments, and operations designed for the cure of prolapse of the uterus by shortening the so-called cardinal, Mackenrodt, uteropelvic, or infundibulopelvic ligaments have no rational basis.

EDWARD L. CORSELL, M.D.

Dworak, H.: A Contribution on the Problem of Large Uterine Cysts. Cysts of the Uterine Wall with Carcinoma (Ein Beitrag zur Frage der grossen Uteruscysten. Cysts der Uteruswand mit Carcinom) *Arch. f. Gynak.*, 93, 2, 63

After reviewing the cases of uterine cysts reported in the literature and the theories regarding the genesis of such cysts, the author describes a large, endothelial cyst with a diameter of 5 cm. which developed from the lateral and anterior wall of the uterus. In the lower portion of the cyst wall, near the cervix, there were small single and conglomerate nodules. On the other side of the uterus there was a large myoma, and in the lower part of the cyst wall and of the uterus there were several smaller myomata. The cyst contained a reddish-brown pulpy coagula mass. On the internal surface its wall showed trabeculations and depressions. A cherry-sized polypoid structure contained a whitish pulp. The lower portion of the wall showed a warty contour and mucus-filled flat hollow spaces.

Histological examination showed the cyst wall to consist of muscle covered with a single layer of cylindrical epithelium some of which was flattened. It disclosed also papillary carcinomatous proliferations which were particularly numerous in the lower portion and had penetrated the wall and formed pedunculated metastases. The polypoid nodule consisted of connective tissue undergoing destruction with endometrial proliferation, cholesterol and iron pigment. Similar endometrialoid foci, some with hypertrophied muscle capsules, were found in the cyst wall and the wall of the uterus. The ovaries were not involved.

The author assumes that the origin of the mesoplasm was displaced epithelium of the mesometrial ducts.

ROBERT MAYER (G)

Keller, R.: Extension of Cervical Cancer to the Vagina (La propagation du cancer du col au vagin). *Arch. franco-belges de chir.* 93, 1933, xxviii, 990

Cancer of the uterine cervix spreads through the lymphatics and also by direct extension into adjacent structures. In the vagina, the part adjacent to the cervix is the first involved. The lower part of the vagina is invaded only in the late stages of the disease, usually in cases of long standing growth. Eventually the vagina is involved in every untreated cancer of the cervix. Such involvement occurs largely by direct extension. Lymphatic dissemination is of less importance although it seems to be more common after X-ray and radium therapy.

Involvement of the adjacent vagina must not be overlooked when surgical removal of the uterus is done for cancer of the cervix. The technique should include the removal of a generous cuff of the adjacent vagina.

It is not unusual to find cancer nodules in the vaginal vault several months after complete hysterectomy for cancer of the cervix. These areas of cancer of the vagina should not be interpreted as recurrences as they probably represent a continuation of the development of tiny nests of cancer which were present at the time of the original operation.

GROVER C. FROST, M.D.

Grossen, H. S.: Cancer of the Cervix Uteri. Some Pertinent Facts Concerning the Treatment. *J. Am. M. Ass.* 93, 2013, 149.

The confusion which is inevitable after reading and listening to many of the discussions of cancer of the cervix therapy has engendered an unwarranted feeling of pessimism in regard to the cure of the disease. However two fundamental facts should be borne in mind: (1) a considerable number of women, even though not treated until the cancer has reached an advanced stage, are cured by the treatment possible today and (2) cures are obtained. About the high primary mortality which attended the treatment necessary to cure even early cases in former times.

Unfortunately it is true that a multitude of worthless remedies have been proposed and tried in the treatment of cancer in the last twenty years and hundreds of women have died while being treated with remedies which we now recognize as totally ineffectual. Of all of the methods of treatment proposed to cure cancer of the cervix, only two have withstood the test of time and can be considered reliable today. These are surgery and irradiation.

More than ten years ago Crossen and his associates adopted a policy of treating cancer of the cervix by irradiation, reserving operation for an occasional very early lesion. Their plan called for a maximum of irradiation at the outset of treatment. This consisted in giving as large a dose of the hard rays of radium as conditions would permit without extending the soft-ray slough into the bladder or rectum, and then adding high-voltage roentgen therapy as soon as it was safe.

Despite a variety of opinions and changing methods, the author and his group held for ten years to the plan of a massive attack at the beginning of treatment. This plan was adopted after careful consideration of the whole field of cancer therapy. In carcinoma of the cervix, several years of trial are required to determine the true curative value of any plan of treatment. A careful study of new plans of treatment as they were proposed during the ten-year trial period did not prove that they offered a better chance for cure.

Today the author derives great satisfaction from the results he has obtained in cases of cancer of the cervix as some of the women who years ago had extensive cancer of the cervix and seemed doomed to a cancer death are now well and entitled to a prognosis for a long life free from pain and distress. He presents briefly the case histories of eleven women treated for advanced cancer of the cervix from six to ten years ago who today are apparently cured. In conclusion he states that such results give justifiable cause for encouragement and hope in the war against cancer of the cervix.

GEORGE H. GARDNER, M.D.

Schmitz, H. The Technique of Radiation Therapy in Uterine Carcinomata. *Am J Obst & Gynec*, 1933, *xxv*, 10.

The tissue dose of irradiation for highly anaplastic carcinomata of the uterus is probably from 4 to 5 erythema skin doses. It is necessary to apply this dose uniformly throughout the true pelvic cavity. In his discussion of the methods employed the author includes the physical principles of irradiation therapy, the definition of the irradiation dose (the biological, termed the "threshold" skin dose, and the physical, termed the "r unit"), the time spacing of applications by the single and the fractional technique, the definition and determination of the wave length, and the measuring of the dose. The technique of the treatment is described and explained by illustrations showing the application of the equal intensity curve on a diagram of the pelvis drawn with calipers devised by the author.

A description of a special Y-shaped intra-uterine brass filter is given. It is shown that the periphery of the uterus is practically surrounded by a gamma-ray dose of 5 threshold skin doses. The total dosage to attain this dose is 6,400 mgm el hrs applied in 3 fractions at intervals of eight days. Since the introduction of this applicator, all fundus cancers are treated by irradiation. The irradiation dose for

portio and cervical canal cancers is 4,800 mgm el hrs given in 3 applications in equally divided doses at intervals of eight days. The radium dose is always the same. Following or during the gamma-ray treatment, roentgen rays are applied until a tolerance skin dose has been given to each field. The number of fields is determined by the size of the pelvis, and the deep dose is calculated from the equal intensity curves.

The indications and contra-indications to irradiation therapy are given, and the pre-irradiation preparation of the patient and the post-irradiation complications are described.

Of 488 cases of primary carcinoma of the cervix, a five-year cure was obtained in 93 (19.14 per cent). According to clinical groups, the incidence of five-year cure in these cases was as follows:

Clinical group	Cases	Five-year cure Cases	%
1	35	28	80
2	62	26	41.94
3	222	36	16.36
4	169	3	1.72

When the cases are grouped in periods corresponding to improvements in the transformers and tubes employed and hence improvement in the deep doses of roentgen rays, the incidence of five-year cure was as follows:

Period	Cases	Kv	Five-year cure %
1914-1919	132	110	14.39
1920-1921	77	140	18.38
1922-1923	123	211 (single massive dose)	20.32
1923-1926	156	211 (fractional dose)	22.43

As the radium dose was always the same, the improvement in the incidence of five-year good end-results was due entirely to improvement in the roentgen therapy.

EDWARD L. CORNELL, M.D.

Brunner, H. Virulence Determinations Before Operation for Cancer of the Uterus, with Particular Emphasis on the Change in Virulence After X-Ray Therapy (Virulenzbestimmungen vor der operativen Behandlung der Uteruscarcinome, unter besonderer Berücksichtigung der Virulenzänderung nach Roentgenbestrahlung). *Arch f Gynaek*, 1932, *cxlix*, 702.

This report is based upon eighty-six cases of carcinoma of the uterus in which the virulence of the bacteria was investigated. Determinations of the virulence of the bacteria and bacterial counts made before and from six to eight weeks after X-ray irradiation in forty-five cases showed that bacterial virulence and bacterial counts do not always vary in the same manner after irradiation therapy and that therefore it is never possible to assume from changes in the number of bacteria that a corresponding change has occurred in the bacterial virulence. However, by means of the virulence test, the

author was able to demonstrate that in cases of tumor which were still operable the danger of post-operative infection and peritonitis could be reduced by pre-operative X-ray treatment.

Women operated upon three weeks after X-ray therapy developed severe postoperative infections much more frequently than women operated upon from six to eight weeks after such treatment. From two to three weeks after irradiation therapy a pronounced leucopenia is often found and the results of the virulence test are usually unfavorable. At the time the author's patients entered the hospital only half of them were suitable for operation from the bacteriological standpoint and in the stage of leucopenia only 15 per cent, whereas from six to eight weeks after roentgen therapy 66 per cent were suitable for operation from the bacteriological standpoint.

In thirty nine cases the material for the virulence test was taken from the cancer crater prior to the operation as well as from the operative wound during the operation. In sixteen cases with negative bacterial virulence, Virulence Group A, the temperature rose above 38 degrees C. on an average of only three times. Fifteen cases in Virulence Group B had a temperature above 38 degrees C. on an average of eleven times. In thirteen of the latter healing occurred by primary intention, and in two the healing of the abdominal wall occurred by secondary intention. Eight cases in Virulence Group C had an elevation of temperature above 38 degrees C. on an average of three or four times. In this group the abdominal wall healed by primary intention only twice and in one case death resulted from infection.

WALTER HANSEN (G)

ADRENAL AND PERITONEAL CONDITIONS

TORRES, A. O. L.: Intestinal Obstruction as a Complication of Diseases and Operations on the Internal Genital Organs (Ueber den Darmverschluss als Komplikation von Krankheiten und Operationen der inneren Genitalorgane). *Acta Obst. et Gynec. Scand.* 1933, 32, 43.

During the period from 1925 to 1930 3,035 cases of adnitis were treated at the University Gynecological Clinic at Uppsala. Intestinal obstruction occurred in 12 (0.39 per cent). Therefore this complication is not so uncommon as has been assumed. However it is less common in adnitis than in appendicitis, chiefly because of the difference in the extent of involvement of the small intestine by the adhesions surrounding the site of inflammation. Intestinal obstruction seems to be most common in cases in which the adnitis has been present for some time, and as a rule is caused by string-shaped adhesions.

Of 1,503 cases in which laparotomy was performed in the Clinic, early or late postoperative ileus occurred in 12 (0.33 per cent). In 12 cases it was caused by adhesions and in 1 case by invagination. Of the cases in which it was caused by adhesions, it followed an operation performed in the presence of

general peritonitis in 5 and an aseptic laparotomy in 3. Of 1,003 aseptic laparotomies performed during the last five years, only 1 (0.10 per cent) was followed by ileus. During this period of time six methods of peritonization and a seroseros method of closing the peritoneal wound edges were employed at the Clinic. It therefore appears that with the aid of these methods the incidence of postoperative adhesions and intestinal obstruction may be reduced.

In the cases of intestinal obstruction complicating adnitis the mortality was 47.7 per cent, whereas in those of postoperative ileus it was only 10.7 per cent. The less favorable prognosis in the former is due to the difficulty in, and frequent delay of, diagnosis and to postoperative complications caused by the primary gynecological condition.

The author reports also a cause of intestinal obstruction with tumors of the genital organs.

SHAW, W.: Ovarian Carcinomata. *J. Obst. & Gynec. Brit. Emp.* 1933, 30, 262, 376.

Shaw reviews 77 cases of ovarian carcinoma found among 500 cases of ovarian tumor and cites the figures of other gynecologists which show the high incidence of malignancy in tumors of the ovary. Of 10 operable tumors in his cases, 17.8 per cent were secondary or coincident malignancies and 32.1 per cent were related histologically to pseudomucous cystadenomas. Malignant degeneration of a pre-existing benign tumor was very rare.

The following classification of malignant ovarian tumors is given with descriptions of the gross and histological characteristics of each type.

Papillomatous tumors

- a. Malignant cystadenoma serosa papillaris.
- b. Malignant serosa papillomatous tumor.
- c. Malignant glandular papillomatous tumor.

Malignant pseudomucinous tumors

- Type 1. Malignant pseudomucinous cystadenoma.

Type 2. Glandular form

- Type 3. Malignant papillomatous pseudomucinous cystadenoma.

Solid and glandular carcinomata of the ovary

Atypical solid carcinomata

- a. Granulosa-cell tumor.
- b. Malignant thyroid tumor.
- c. Carcinomatous cyst of the ovary.

Neurotic carcinomata of the ovary (mentioned once often in reports based on autopsy material).

Krukenberg tumors

Atypical Krukenberg tumors

In 3 cases with coincident carcinomata of the uterus and ovaries a careful study of serial sections was made. Carcinomata of the uterus and ovaries are not infrequently associated. When they arise metachronically, the uterine growth probably appears first and the first evidence of change in the ovary is the appearance of simple benign cystomata.

Following a discussion of the spread of carcinomata of the ovary and the symptoms, the author

reports the results in the cases he reviews. He states that patients who are untreated rarely live longer than one year. As a rule X-ray treatment alone will prolong life substantially, but in cases of large tumors it is to be avoided because of the primary mortality from its use. Removal of the ovary or ovaries without X-ray treatment or hysterectomy is practically useless. Regardless of X-ray treatment, the best results are obtained by panhysterectomy. The prognosis is unfavorable in any case. Of the patients whose cases are reviewed by the author, only 8 are still alive. The longest survival since discharge from the hospital has been four and a half years and the shortest seven months.

HENRY S. ACKEN, JR., M.D.

MISCELLANEOUS

Novak, E. The Morphology of the Genital Epithelia, with Special Reference to Differentiation Anomalies. *Am J Obst & Gynec*, 1932, XXX, 635.

The author describes the occurrence of certain differentiation anomalies in the epithelium of the various segments of the genital canal. Among them are the occurrence in the tube of definite endometrial tissue, the occurrence in the ovary of an endometrial or a tubal type of tissue and on the surface of the ovary of stratified squamous areas, the occurrence in the endometrium of squamous areas or of patches of tubal epithelium, and, in the normally columnar-cell regions of the cervix, the frequent occurrence of stratified squamous "metaplasia" and the occasional occurrence of a tubal type of epithelium.

Such anomalies show the tendency toward intermutability of these genital epithelia under certain conditions, a tendency obviously dependent upon their common origin from the same mother tissue, the coelomic epithelium. This fundamental fact must be borne in mind in the interpretation of many pathological lesions such as endometriosis. In the latter, direct transformation of germinal epithelium into either a tubal or an endometrial type can be demonstrated histologically. Therefore it seems unnecessary to invoke the doctrine of implantation to explain the lesion. All types of differentiation transitions may be seen in ovarian endometriosis—tubal epithelium with or without stroma, uterine epithelium with or without glands and with or without stroma, and endometrium with or without physiological reactivity, with or without hemorrhage.

The study of these ovarian epithelia also lends strong support to the theory of the germinal epithelium origin of serious cystadenomata as these tumors are often lined by epithelium indistinguishable from that of the tube. The application of such studies to the problem of tubal pregnancy is also taken up by the author.

In the discussion of this report CASLER said that these growths are very much like carcinoma in their invasion.

TE LINDE said that, in spite of the many discussions of the cause and life cycle of endometriosis, our knowledge regarding the condition is still very incomplete. No matter what theory is advanced to explain the cause, there is some stumbling block in each case. Regardless of the manner in which the endometrium gets into the ovary, it is very probable that dissemination throughout the peritoneal cavity depends upon the rupture of endometrial cysts.

EDWARD L. CORNELL, M.D.

Ricci, G. Pelvic Varicocele (El varicocele pelviano). *Bol inst de clin quir*, 1932, VII, 5.

Pelvic varicocele is characterized anatomically by permanent dilatation of the pelvic veins and clinically by subjective and objective symptoms, the most important of which are low pain and palpable painful varices which are relieved by the Trendelenburg position. Two types are distinguished (1) the primary or idiopathic, and (2) the secondary or symptomatic. The author deals chiefly with the primary or idiopathic type. The secondary or symptomatic type is usually due to mechanical pressure on the vena cava produced by a tumor, inflammation, or a congenital malformation.

The primary form was first described by Richet in 1857. The author reviews the anatomy of the region, particularly the normal vascular and nervous anatomy of the pelvis and the microscopic and macroscopic anatomy of pelvic varicocele. Pelvic varicocele seems always to be implanted on congested areas, particularly in the genital organs and pelvis. Varices may or may not occur in the lower extremities. The color of the skin of the perineum may be altered, and hyperpigmentation, intertrigo, and more or less severe eczema may appear about the genitals. The ovaries and uterus are involved, and varices occur in the broad ligaments and ovarian pedicles. In most cases there is no involvement of the peritoneal serosa. The condition is accompanied by sclerosis, and when the visceral sclerosis is advanced the cellular tissue of the pelvis is invaded. Intervention is not advisable. The vessels of the varix may be filled with coagulum, either recent or old. When the coagulum is old, calcification may occur with the formation of phleboliths. Varices of the vasa vasorum may occur.

The lesions of the ovaries are progressively parallel with the evolution of the disease and lead to atrophy and sclerosis. The sclerosed ovaries contain follicular cysts lined with flat endothelial cells with prominent nuclei. The number of atretic follicles is increased, and hyperplasia of interstitial cells of the ovary occurs. At the hilus of sclerotic ovaries, neuromata have been found in the sympathetic fibers.

The fallopian tubes are less affected, although in severe cases they may show extreme venous dilatation with varicose lesions, congestion, and edema.

The uterus is very susceptible to lesions. In this organ as elsewhere the lesion is a varicose state characterized by a process of chronic phlebitis and phleboscrosis.

The arteries present lesions of endarteritis and sclerosis.

The nerves undergo trophic changes which result in neuritis.

The lesions are the cause of intense pain and general degeneration of the pelvic organs, muscles, glands, and supporting tissues. Valvular proflitis and preneoplastic degenerative lesions develop. All of these trophic lesions may be of neurovegetative origin.

It is possible that the congestion of difficult menstruation has some relationship to the condition even when the menstrual flow itself is normal. The author describes the findings at the time of menstruation. They include numerous abnormalities. An increase of all of the phenomena related to the sympathetic nervous system with a decrease of all reactions in the realm of the vagus has been reported. It is not uncommon for individuals with these conditions to become hypochondriacal from the intense discomfort and finally to develop a psychosis.

Any factor favoring congestion in the small pelvis favors pelvic varicocele. The neurovegetative reactions are always abnormal. The symptoms include nausea and vomiting of the emotional type with globus hystericus and with constipation from spasm of the intestines. X-ray examination shows a small and hyperkinetic stomach and meteorism. The circulatory system shows cardiovascular instability, a tendency toward reflex arrhythmias, venous stasis, and low tension. Respiration is slow and irregular and the patient has a sensation of oppression. As in vagotonics, there is a sensation of a lack of air. Other symptoms are dermatographism,

acne, coldness of the extremities, and general lassitude. The sympathicotonic constitution shows less tendency to develop vascular disorders.

Anatomically the relations of the utero-ovarian veins of the left side favor the development of varicocele. They empty at a right angle into the renal vein. Changes occur in the left ovary before they occur in the right ovary. The absence of valves in this area is important. The character of the cellular flora of the parametrium and the situation of the pelvic colon are considered possible factors. In many of the patients there is ptosis and the relations of the sigmoid cause circulatory disturbances. All persons developing pelvic varicocele are of sedentary habits and suffer from chronic constipation. These conditions favor auto-intoxication, which in itself is considered capable of causing vascular sclerosis.

Clinically, the condition is always similar varying only in its intensity. In general it may be manifested by pain and menstrual disturbances. Frequently there is a sensation of weight in the pelvis. The menstrual disorders are very varied. As a rule the menstrual flow is increased and has the character of menorrhagia. Amenorrhea is rare. The nervous system is often involved.

The prognosis with respect to health is unfavorable if the condition is well established. With the appearance of nervous symptoms the outlook is very serious.

The treatment depends upon the cause, whether it is mechanical, constitutional (hereditary syphilis), endocrine, or neurotrophic.

The author reports forty-four cases.

A. E. TART, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Hoffström, K. A. *Studies of Eclampsia (Eklampsie-studier)* *Acta obst et gynec Scand*, 1932, xii, 351

This article is based on cases treated at the Lying-In Hospital at Tammerfors, Finland, in the twenty-five year period from 1906 to 1930. It is divided into a clinicostatistical section and a discussion of the periodicity of eclampsia.

During the twenty-five-year period mentioned the clinical frequency of eclampsism and eclampsia was 1.25 per cent and the frequency of eclampsia with seizures was 0.95 per cent. As an increase in frequency of these conditions has been observed during recent years, the author urges increased efforts at prophylaxis. Statistics from a number of Nordic clinics show that in 200,000 deliveries the frequency of eclampsia with seizures was between 0.57 and 0.95 per cent. In 50,000 deliveries reviewed by Bergen, the incidence was between 1.10 and 1.49.

The tendency to develop eclampsia increases with age. Eclampsia is 5 times as frequent in primiparæ as in multiparæ, and 9 times as frequent in cases of multiple pregnancy as in cases of single pregnancy.

In the cases reviewed by the author the treatment was of the following 3 types:

1. Purely expectant treatment according to the Stroganoff or Stroganoff-Zweifel method.

2. Conservative active treatment consisting of delivering operations after dilatation of the soft parts occurring spontaneously or brought about by conservative measures.

3. Radical active treatment consisting of delivering operations after forcible dilatation, and cesarean section.

Of the 240 cases reviewed, 33 per cent were treated expectantly with a maternal mortality of 9 per cent and a reduced fetal mortality of 1 per cent, 43 per cent were given conservative active treatment with a maternal mortality of 12 per cent and a reduced fetal mortality of 10 per cent, and 24 per cent were given radical active treatment with a maternal mortality of 21 per cent and a reduced fetal mortality of 26 per cent.

The prognosis for the mother and child is more unfavorable the earlier in the pregnancy the condition develops.

The total maternal mortality was 12.9 per cent. The fetal mortality, unreduced, was 29.3 per cent, and reduced was 14.0 per cent. In cases of eclampsia with seizures the maternal mortality was 15.9 per cent, the unreduced fetal mortality was 29.8 per cent, and reduced fetal mortality was 14.1 per cent.

The periodicity of eclampsia was studied during the period from 1909 to 1928. From his findings the author draws the following conclusions:

1. There is undoubtedly a periodicity in the occurrence of eclampsia. In the city of Tammerfors, during the twenty years reviewed, pregnancy, labor, and the puerperium were complicated by eclampsia twice as often in April, May, and June as at other times of the year and the incidence of eclampsia was lowest in the month of March.

2. There is no provable relation between climatological factors (atmospheric pressure, air temperature, and rainfall) and the frequency of eclampsia.

3. Of the acute diseases, angina and laryngo-bronchitis may predispose to eclampsism and eclampsia.

Titus, P., and Messer, F. C., and McClellan, R. H. *Increase of Guanidine Compounds in Eclampsia. An Experimental Study.* *Am J Obst & Gynec*, 1932, xxiv, 667.

Several investigators have demonstrated various biochemical or metabolic disturbances in eclampsia, such as fluctuations in the blood sugar during the attack and a trend toward hypoglycæmic levels. An increase in the ureic acid and lactic acid content of the blood and in the blood pressure, and the occurrence of oedema, albuminuria, and convulsions are common symptoms. Reports have been made of an increase in guanidine-like substances in the blood during pre-eclampsia and eclampsia.

In animals, all of the clinical signs of eclampsia mentioned, including the fluctuations in the blood sugar and typical convulsive seizures, may be produced by the administration of guanidine compounds. Moreover, the clinical use of certain guanidine compounds to reduce the blood sugar in diabetes as a substitute for insulin has now been abandoned because of the toxic effects of these compounds and their tendency to cause sudden and profound hypoglycæmia.

Authorities have differed as to whether the increased apparent guanidinæmia in cases of acute liver injury, either clinical or experimental, is the cause or the result of the liver-tissue degeneration.

On account of the abruptness of its effect, the experimental injection of a single dose or two of a guanidine compound sufficient to kill an animal quickly cannot be expected to produce much, if any, histological change in the tissues of the liver or kidneys. The authors therefore carried out investigations to determine whether or not a more or less protracted series of injections of guanidine and dimethyl guanidine would, by their cumulative action, cause histopathological changes in the liver and kidneys. In a large, controlled series of animals, degenerative changes of varying types, but chiefly suggestive of early stages of hepatic degeneration were produced. These changes included cloudy swelling, interstitial

hemorrhage, beginning periportal thrombosis, peripheral and central fatty degeneration and infiltration, and focal necrosis. The kidneys showed cloudy swelling of the convoluted tubules, desquamation of the lining cells, and hemorrhage. In the animals which received a single injection of guanidine daily the hepatic changes were less marked than in those receiving injections at hourly intervals to the point of death in one day. In the former, liver-cell regeneration probably took place during the resting period.

It is of interest that the experimental administration of a metabolic toxin which can be elaborated within the body can reproduce in animals the major clinical symptoms and at least the early stages of the histopathological changes seen in eclampsia. The source of an accumulation of guanidine-like substances within the body and the relation of these substances to eclampsia are still problematical.

EDWARD L. CORRELL, M.D.

Kosaka, T: A Study on the Effects of Bleeding upon Pregnancy. *Jap. J. Obst. & Gynec.*, 1932, XV, 364.

To study the effects of bleeding on pregnancy the author carried out experiments on rabbits in which, at various stages of pregnancy he bled the animals slightly, moderately and severely.

The smallest amount of blood taken varied from 0.5 to 1 per cent, the moderate amount, from 1.4 to 1.6 per cent, and the largest amount, from 0.3 to 1.6 per cent, of the body weight.

In the early stages of pregnancy the bleeding had no marked effect. In mid-pregnancy severe hemorrhage caused abortion. In the late stage a slight hemorrhage caused labor to set in, and when more profuse bleeding occurred parturition was delayed and the fetus was born dead or died soon after birth.

On examination of the placenta of these rabbits, it was found that a single severe hemorrhage or slight frequent hemorrhages produced histological changes (congestion and hemorrhage especially on the fetal side of the placenta).

Blood-letting caused uterine contractions, the severity of which was in direct proportion to the amount of bleeding. This observation may have a clinical bearing on the relationship between hemorrhage and the termination of pregnancy.

CHARLES F. DUBOIS, M.D.

Tosaura, O: Purpura and Pregnancy (Purpura e gravidanza). *Arch. di med. e chir.* 1931, XXXI, 371.

The author reports two cases of purpura associated with pregnancy. The first was that of a para-III twenty years of age. The patient's first child was born at term, but her second had been born in the seventh month of pregnancy following manifestations of pre-eclampsia. She was uncertain regarding the date at which her third pregnancy began. Several days before she entered the hospital she was seized with headache, malaise, and nausea and twenty-four hours before her admission she noted edema of the face and the appearance of small

ecchymoses on the forehead and over the sternum. On the day of her admission she had five convulsions.

Physical examination revealed reddish-purple spots, varying up to the size of a lentil, on the arms, abdomen, and sacral region, and slight edema of the lower extremities. The spots did not disappear on pressure. The uterus was half way above the umbilicus. The fetus was in cephalic presentation with the back toward the left side. Weak, arrhythmic fetal heart tones were noted in the left lower quadrant.

Twenty-four hours after the patient's admission to the hospital a full-term dead male child weighing 3,500 gm. was delivered spontaneously.

After delivery the patient had five convulsions and then lapsed into stupor for a day. Thereafter her condition steadily improved although petechiae appeared on the legs, arms, abdomen, and sacral area, and to a less extent on the head. Ecchymoses occurred whenever she had received the slightest trauma or a hypodermic injection.

Examination of the blood showed the erythrocyte count to be 4,415,000, the leucocyte count, 12,000, the platelet count 23,000, and the hemoglobin 68 per cent. The percentages shown by the differential count were neutrophils, 81; large lymphocytes, 13.9; small lymphocytes, 4; transitional cells, 1; and myelocytes, 0.1. Mild microcytosis and polychromatophilia were noted. The coagulation time was six minutes, and the bleeding time seventeen minutes. The tourniquet test was positive. The condition gradually improved, the spots disappeared, and the patient was discharged as cured on the thirtieth day.

The second case reported by the author was that of a twenty-four year-old primipara whose pregnancy had been normal up to two months before her admission to the hospital, when petechiae varying in size from that of a pinpoint to that of a lentil appeared on the body, arms, and legs.

Blood examination showed the bleeding time to be seventeen minutes, and the coagulation time to be six minutes. The tourniquet test was positive. The erythrocyte count was 3,500,000, the leucocyte count 17,000, and the hemoglobin 61 per cent. The percentages of the differential count were polymorphonuclear neutrophils, 78; eosinophils, basophils, 0.5; large lymphocytes, 19; small lymphocytes, 5; transitional cells, 3; and myelocytes, 0.3.

The uterus was in the median supra-sacral position. The patient was delivered of a living male child weighing 3,000 gm. Immediately after delivery because of severe hemorrhage, she became pale, her extremities became cold and she lapsed into unconsciousness. Death occurred after three and a half hours. There was no evidence of purpura.

Autopsy revealed subcutaneous hemorrhages in various stages of absorption and hemorrhagic infiltration of the parietal peritoneum increasing from the kidneys to the pelvis. The blood vessels in the latter area were intact. The uterus was large and empty and showed no rupture. The broad ligaments were infiltrated with blood, but showed no blood-vessel injury.

The author concludes his article with a discussion of the accepted theories of the pathogenesis of this type of purpura and a review of the symptoms and treatment

PETER A. ROSI, M D

Gibberd, G F Bacillus Coli Infections of the Urinary Tract Complicating Pregnancy and the Puerperium *Guy's Hosp Rep*, Lond, 1932, lxxxii, 380

Although colon bacillus infections of the urinary tract are common complications of pregnancy and the puerperium, their occurrence was not recognized until the present century. The importance of such infections in midwifery practice is apparent from the fact that of the last 6,158 Class A patients under the care of the Maternity Department at Guy's Hospital, London, 104 were treated for colon bacillus infection complicating pregnancy or the puerperium. In an unselected group of pregnant women the incidence of such infection is therefore probably about 1 or 2 per cent.

The proximity of the anus to the urethra has led to the theory that colon bacillus infections of the urinary tract are ascending infections. However, all of the evidence points against this supposition since clinically the most common and the first site of the infection is the pelvis of the kidney and the ureter and infection of the bladder is usually secondary to infection in the renal pelvis. A clinical urethritis is practically unknown. Some observers have preferred to regard these colon bacillus infections of the urinary tract as secondary to colon bacillus bacteraemia or septicæmia—an "excretion pyelitis" in which the kidney merely excretes the bacteria. However, this condition is rare. In the opinion of obstetricians, infection of the renal pelvis by colon bacilli from the colon is primary and bacteraemia or septicæmia occasionally arises from this focus.

The passage of the bacteria from the colon to the kidney, whether it occurs by way of the lymphatics or some other route, is definitely associated with the dilatation of the ureter, especially the right ureter, which is so commonly found in pregnancy. This dilatation is now thought to be due to hypertrophy instead of, as was formerly thought, to obstruction.

Typical attacks of pyelitis may occur at any time during pregnancy or the puerperium, but are most common during the middle third of pregnancy. The other symptoms include frequency, pain on micturition, pain in the loin, malaise, fever, and vomiting. The urine may be opalescent with bacteria, acid in reaction, and loaded with colon bacilli. The diagnosis is usually easy.

The treatment adopted in the Maternity Department of Guy's Hospital consists in rendering the urine alkaline. This can usually be done by giving from 40 to 60 gr of alkali, usually equal parts of potassium citrate and sodium bicarbonate, every four hours. The treatment must be kept up during the night as well as during the day. Occasionally the author has given mercurochrome intravenously,

but in some cases this has been followed by a severe reaction. In some cases he has terminated the pregnancy when medication has failed.

HARRY W FINK, M D

Apajalahti, A The Subsequent Fate of Women Operated upon for Tubal Pregnancy (Ueber die späteren Schicksale der wegen einer Tubenschwangerschaft Operierten) *Acta obst et gynec Scand*, 1932, xii, 329

This report is based on a follow-up of 300 women who were operated upon for tubal pregnancy in the First University Gynecological Clinic of Helsingfors in the period from 1920 to 1930. The replies to the questionnaire show that the incidence of postoperative genital disturbances and abdominal pains decreased after the year 1925 when the Clinic adopted the so-called high or medium high peritonization and the tangential peritoneal wound treatment recommended by Beuttner and others. The author ascribes the decrease entirely to the method of peritonization cited and a more careful serous method of suturing. He calls attention to the fact that of 95 women with hæmatocele and adhesions for whom the mentioned method of peritonization was not used, only 44 per cent are now free from symptoms, whereas of 43 for whom the method was employed, 88 per cent are now free from symptoms.

In the period from 1920 to 1925, postoperative ileus occurred in 3 (3.2 per cent) of 94 cases treated, whereas in the period from 1926 to 1930 it occurred in none of 116 cases treated. The author therefore recommends the use of the described method of peritonization in cases of ectopic pregnancy in which there are rough peritoneal surfaces.

The follow-up showed also that of 79 women capable of conception who answered the questionnaire, 41 became pregnant within a period of three years. Of these, 29 were delivered at term, 20 had an abortion, and 3 had another extra-uterine pregnancy. In 18 women extra-uterine pregnancy occurred twice. If the observation period is extended to four years, recurrence occurred in 15 (7.3 per cent of the total number of women and 17 per cent of the women becoming pregnant later who answered the questionnaire).

In conclusion the author states that when adhesions are found at operation in women with extra-uterine pregnancy, treatment to favor resorption should be given as this may perhaps decrease the high incidence of abortion and recurrence of ectopic pregnancy in such women.

LABOR AND ITS COMPLICATIONS

Donovan, H C E Antenatal Treatment of Breech Presentations *Med J Australia*, 1932, ii, 617

Because of the high fetal mortality in breech presentations, Donovan urges attempts at external version a few weeks before the thirty-fifth week of pregnancy. He gives as the latest available figures for the mortality in breech delivery 39 per cent in

uncomplicated cases and 66 per cent in complicated cases of primiparae and 22 per cent in uncomplicated cases and 64 per cent in complicated cases of multiparae. While urging attempts at external version, he admits that in the cases in which the danger from delivery is greatest—cases of footling and frank breech presentation—the chance of successful version is least.

After describing his technique for external version, he reports the results in a series of 95 cases. Eighty of the babies were successfully turned and the fetal mortality was 5 per cent. One baby died as a direct result of the version. These cases are compared with cases of unsuccessful version, in which the mortality was 27 per cent, and with a series of 100 consecutive cases of breech delivery in which the total fetal mortality was 31 per cent.

The author believes that failure to turn the child in a primipara of any age should raise the question of cesarean section, and that the decision should depend upon the size of the child and the wishes of the parents.

HENRY B. ACKER, JR., M.D.

Hipaley, P. L.: The Management of Breech Delivery. *Med J Australia*, 1931, 2, 61.

In a series of 100 breech deliveries reviewed by the author there were 50 stillbirths. Six of the stillborn infants were macerated. It is assumed that 70 per cent of the deaths were due to cerebral hemorrhage.

In discussing the management of breech presentations the author advises keeping the patient in bed to preserve the membranes and making a vaginal examination after their rupture. He calls attention to the necessity of taking time for the delivery as haste is harmful and usually unnecessary. He describes the usual methods of dealing with arrest of the breech wherever it may occur and emphasizes the importance of suprapubic pressure.

He believes that in the prevention of upward extension of the arm, proper flexion of the head and spine is important. In cases of frank breech presentation he advises bringing one leg down in order that it may not interfere with proper flexion of the head. For the management of extended arms he suggests pressure on the scapula to push it toward the fetal spine in order to bring the arm within reach. Extensive rotation of the body is to be avoided.

In conclusion Hipaley describes the two types of mechanism in the sacroposterior positions.

HENRY B. ACKER, JR., M.D.

Morton, D. G.: Fetal Mortality and Breech Presentation. *Am J Obst & Gynec*, 1932, xiv, 823.

In 385 breech deliveries the mortality of viable infants was 5.4 per cent and was about the same in the infants of primiparae as in those of multiparae. When the mortality of premature infants, 43.0 per cent, is deducted, the mortality of full term infants is found to be 6.1 per cent. For the latter the obstetrician may have been responsible as there were no technical difficulties in the delivery of the premature infants. The majority of the infant deaths occurred

in cases in which there was some type of interference with labor such as induction, manual completion of the dilatation of the cervix, or breaking up of the breech presentation at full dilatation by traction.

An analysis of the various methods of delivery employed, while inconclusive because of the comparatively small number of variations from the usual method of breech extraction followed by the Marchewicz maneuver failed to show that one method was appreciably more advantageous than another. It was the course of the earlier stages of labor which determined the outcome of the delivery: either induction of labor appeared necessary or there were poor pains and the dilatation of the cervix was completed manually or for some other reason a foot was brought down and the breech wedge was broken up when the cervix was fully dilated. These are the cases in which the results were poor. The author therefore concludes that the conduct of the earlier stages of labor is all-important, provided a reasonably good technique is used at actual delivery.

It is granted that labor complicated by poor pains often offers a problem which is difficult to solve. However indications for interference must be very definite as interference is associated with a very high fetal mortality. The outcome should be largely predictable from the character of the early stages of labor. Indications for cesarean section should be carefully reviewed if there is reason to believe that the labor cannot be terminated without the aid of various methods of interference from below.

In the cases cited the maternal mortality as negligible. Maternal mortality though technically high, was due almost entirely to trivial infection. Morton believes that the bag should be abandoned as a means of inducing or hastening labor except in cases in which the life of the child is of secondary importance.

While the number of poor results in the cases reviewed is sufficient to demand explanation, the author calls attention to the fact that many of the women were cared for by young house officers in training.

The total mortality in recent years, in which two thirds of the viable infants are delivered, was 9.4 per cent as compared with 4.8 per cent in the total number of cases. Moreover approximately one-half of the mortality of 9.4 per cent occurred in the cases in which the child was born prematurely. Barring accident and interference, the mortality of full-term infants presenting by the breech should be comparatively small.

EDWARD L. CORVILL, M.D.

Phane, E. D.: The Difficulties and Dangers of Forceps Delivery. *J Am M Ass*, 1931, xcvi, 817.

Records of 40, 43 births in 1924 showed that an operation aiming at delivery was done in 4,879 (12.2 per cent). In deliveries at the hospital, the incidence of such operations was 24 per cent and in deliveries in the patients' homes it was 8 per cent. Forceps application was done in 2,833 (7.3 per cent) of the cases and constituted 53 per cent of all operations.

Of 11,063 hospital births, forceps were used in 1,531 (13.8 per cent), whereas of 29,080 home deliveries they were used in 1,302 (4.5 per cent). The lower incidence of operative procedures in home practice was associated with a lower stillbirth rate (2.45 per cent) than the stillbirth rate in hospital practice (3.61 per cent).

Plass states that there is no good reason to believe that forceps delivery in the course of a slow labor diminishes the risk to the child. Rapid birth, whether proceeding naturally because of unusually strong pains or brought about artificially by manipulations or the injudicious use of pituitary extract, is far more dangerous to the child because of the increased likelihood of intracranial injury. Plass states that spontaneous labor is safer for both mother and child than any type of interference. The old rule of "one hour on the perineum and two hours in the mid-pelvis" still governs conservative practice.

The stillbirth rate in all forceps deliveries was 4.87 per cent as compared with a rate of 2 per cent in spontaneous births. Of 1,114 cases of stillbirth, delivery was brought about by forceps in only 138 (12.4 per cent), whereas breech extraction or podalic version was done in 154 (13.8 per cent). Forceps delivery is generally a much safer procedure than extraction of the after-coming head. In fact, the risk from pituitary extract given to hasten labor or to avoid the application of forceps is probably greater than that involved in low forceps delivery.

ROLAND S. CROON, M.D.

Novey, M. A. A Review of 570 Forceps Operations
Am J Obst & Gynec, 1932, xxv, 882

The forceps operations reviewed were performed in 570 of 16,442 deliveries occurring in a period of approximately ten years on the University of Maryland Indoor and Outdoor services and the Health Department Obstetrical Service. There were 10 maternal deaths. Five of the maternal deaths were caused by eclampsia, 1 each was due to acute toxæmia, acute yellow atrophy, and puerperal infection, and 2 were due to cardiac disease. The indications for the forceps operations were as follows:

Indication	Cases	Indication	Cases
Prophylactic	141	Maternal heart disease	10
Occiput posterior	108	Face presentation	6
Prolonged labor	96	Abruptio placentæ	6
Fetal distress	70	Aftercoming head	3
Contracted pelvis	48	Placenta prævia	2
Transverse arrest	26	Maternal tuberculosis	1
Eclampsia	21	Pneumonia	2
Maternal distress	13	Not stated	6
Prolapsed cord	11		

The results with regard to the child were as follows:

	No	Per cent
Stillborn	71	12.45
Dying within two weeks	30	5.26
Total infant mortality	101	17.71

The corrected stillbirth rate for high, mid, and low forceps combined was 5.96 per cent. In the 3

groups the infant mortality in the first two weeks of life was 3.15 per cent. The total corrected infant mortality, including both stillborn infants and infants dying within the first two weeks of life, was 9.4 per cent.

There were 48 cases of contracted pelvis with external conjugates of 18 cm or less. Practically all of these were seen before the popularity of laparotomies. Today, forceps delivery would be done in very few of them. In 7 cases in which high forceps were used the infant mortality was 71.42 per cent, in 27 in which mid forceps were used it was 33.33 per cent, and in 14 in which low forceps were used it was 21.42 per cent. In the last group, delivery was effected after the infant had been injured by prolonged labor.

The figures presented indicate that, at best, obstetrical forceps are dangerous and should be used only upon suitable indications and by one who is skilled in their application.

EDWARD L. CORNELL, M.D.

Lang, F. J., and Haslhofer, L. Changes in the Symphysis Pubis and Sacro-Iliac Articulations as a Result of Pregnancy and Childbirth
Arch Surg, 1932, xxi, 870

The authors studied the pelvic joints in pregnancy by roentgenography, horizontal sections, and a histological study of cross-sections. At the end of pregnancy and shortly after labor the joints were found gaping. The authors conclude that the increased mobility is caused chiefly by mechanical strain and is similar to that noted in men following heavy work.

Histological study of the affected joints showed the frequent presence of cysts. Many of the cysts contained small fragments of cartilage and bits of tissue from within the joints which had been detached by the rubbing together of the joint surfaces. None of the sacro-iliac joints and scarcely any symphysis pubis investigated was free from pathological changes.

Changes that must be considered permanent dilatations of the pelvis are found in extensive fissure formations and T-shaped clefts of the symphysis pubis. These can be seen at the end of pregnancy and in women who have given birth to full-term infants. The occasionally observed true joint of the symphysis pubis is also the result of adaptation to functional activity. The gross and microscopic findings of the authors' study indicate that pregnancy and labor with their disturbances of the static mechanical relationship of the pelvis are not inconsequential factors in the causation of arthritis deformans.

GOODRICH C. SCHAUFFLER, M.D.

PUERPERIUM AND ITS COMPLICATIONS

D'Errico, E. The Management of Acute Inversion of the Puerperal Uterus
New England J Med, 1933, ccviii, 1

Acute inversion of the uterus is a rare obstetrical accident. The author reports eleven cases in which

the two conditions usually suggested as causes—traction on the cord and shortness of the cord—were absent. In five, the condition may have been due to too vigorous Cr  d   maneuvers. Fetal implants occurred in two cases and adherent placenta in one. Atony of the uterus, probably of the lower segment, was thought to be present in the majority.

The three outstanding symptoms were shock, hemorrhage, and pain in the lower part of the abdomen. The pain was described as sharp, continuous, and cramp-like. It occurred over the region of the bladder and extended into the inguinal region.

Bimanual examination should be done at once. If the inversion is partial, an indentation, cupping, or crater is felt instead of the convex dome of the contracted fundus. If the inversion is complete, a pear-shaped mass will be palpable by vagina and the crater will be evidenced by the constriction of the neck of the uterus.

After the condition is diagnosed no further oxytocics should be used as their action may only decrease the size of the constricting ring and make reposition difficult.

Deep anesthesia should be induced, the ring dilated with the fingers, and an attempt made to replace the inverted fundus by vaginal manipulation. If this procedure is successful the fundus will be felt to snap back suddenly. After the reposition, contractions should be stimulated by gentle massage of the fundus and the administration of drugs before the hand is removed. Packing of the uterus may then be done to prevent recurrence. The danger of rupture should always be kept in mind. All manipulations should be done gently.

If the method described is unsuccessful, treatment should be given for the shock and laparotomy performed when the patient's condition warrants it. In the author's cases which were operated upon, Huntington's technique—gradual drawing up of the inverted fundus—was employed.

In the eleven cases reported there were four deaths, a mortality of 36 per cent. In one of the fatal cases treatment was given for shock and the patient prepared for laparotomy but death occurred before the operation was performed. In another, the condition was diagnosed after death. In the third the patient was brought to the hospital for treatment of shock and died before reposition was attempted. In the fourth, laparotomy for an inversion of four days' duration revealed rupture of the bladder and death occurred a few hours after hysterectomy. In one of four other cases in which laparotomy was performed, the condition was found on routine postpartum examination twelve days after delivery.

The author emphasizes the importance of calling the attention of medical students to this condition. He concludes that Huntington's method should be used when attempts at simple vaginal replacement are unsuccessful. Spinelli's operation should be done in chronic cases, and vaginal hysterectomy as suggested in Fladley's report, should be reserved for septic cases.

DONALD G. TULLERTON, M.D.

Chaubert, C. I. The Indication for Ligation of the Veins in Pyemia of Genital Origin. A Report of Five Cases of Ligation of the Veins (Die Indikation zur Venerenunterbindung bei py  mischer Py  mie. Zugleich Bericht   ber f  nf F  lle von Vena cava Unterbindung.) *Zentralbl. f. Gyn  k.*, 1933, p. 3514.

From a review of the material of the Kiel Gynecological Clinic in the period from 1910 to 1932 it is evident that in 63.5 per cent of the cases in which, according to Martin, ligation of veins should have been done spontaneous healing occurred. The author emphasizes that a septic process with involvement of the blood vessels in the region of the female genitalia presents a somewhat different problem than a septic process in another part of the body. A chill in the presence of such a process is not always the sign of a manifest pyemia. Therefore a chill alone does not constitute an indication for venous ligation. A chill does not occur only at the time of bacterial invasion of the blood stream. It may be the sign of a sudden increased protective reaction on the part of the blood against some antigen.

In every wound infection there is a focus for the development of sepsis with a venous system draining it (Sch  ttm  ller). In the female genitalia this venous system is in the region of the independently contracting uterine musculature. Chills may be caused by the contraction of the musculature even during spontaneous expulsion of the abortion. Under such circumstances there is a passive bacteremia. A true thrombophlebitis may result from contamination of primarily sterile thrombus material by aerobic organisms from the interior of the uterus or as the result of the formation of an infected thrombus by extension to the inner surface of the venous wall of a lymphatic phlegmonous process due to a periphlebitis. Spontaneous sealing off occurs as a result of attenuation of the bacteria and endophlebittic or periphlebittic occlusion. More frequent chills may be due to recurrent passive bacteremia.

By no means as yet known is it possible in this condition to judge a pure inflammation (Stoeckel) the site or virulence of bacteria, or the local power of resistance. Among cases of sepsis running a stormy course without localization the author has seen cases showing locally only a severe diffuse myometritis, and with so or only a few chills—cases of myometritis sepsis. In such cases the uterine musculature is paralyzed by the large quantity of bacterial toxins and acts as a medium for the continuous transmission and carrying off of the bacteria. Chills may be absent even when an abscess continuously empties itself into a neighboring venous area and bacteria attach themselves to the endothelium of the veins and increase very rapidly. Involvement of the veins by periodical or continuous bacterial invasion in a suppurative process in the genital region following abortion or delivery is not recognizable from the sausage-like strands of Martin which may be felt in the parametrium following

complete emptying of the uterus. It is not impossible that under certain circumstances such a very extensive inflammation of the lymphatic channels may be of less importance so far as a systemic condition and infection is concerned than a small venous infection hidden away somewhere. Nor is it impossible for an extensive thrombophlebitis to terminate favorably if the systemic condition is not continuously aggravated by a primary progressive lymphangitis which does not become localized. Moreover, during the development in the blood stream there is at all times the possibility of spontaneous subsidence of the process.

From these facts the author concludes that in pyæmia of genital origin an expectant attitude

should be adopted at first. Early ligation of the efferent veins is not advisable. The only cases suitable for such ligation are those in which it is possible, by operative sealing off of the venous process from the circulation, to prevent a flushing in of the infected thrombus after natural sealing off of the channel by the repeated bacterial invasion has failed to occur. As a rule the vena cava, and sometimes, with it, the spermatic veins, are ligated as the localization can be determined only with great difficulty. Up to the present time the transperitoneal route has been used, but in some cases the extraperitoneal approach is possible.

Five recent cases treated by ligation at the Kiel Clinic are reported

DERICHSWEILER (G)

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

Orlino, N.: The Causes of Certain Difficulties in the Collection of Separate Urines and the Best Way of Recognizing Them (*Sulle cause di alcune difficoltà nella raccolta delle urine separate e sulla migliore maniera di riconoscerle*). *Arch. med. di univ.* 93, 12, 559.

Little has been written on the use of the blaenoth sound in the ureter. The author reports nine cases in which an opaque sound was employed to greater advantage than the ordinary sound. He advises the use of the latter only in case of necessity. The shape of the tip of the sound is of little importance. The cone shape is of advantage in certain cases of ureteral stricture as it penetrates with greater facility but it probably causes greater trauma. Soft and flexible sounds are more apt to show the natural form of the ureter. The injection of fluid changes the concentration of urine collected and thereby seriously changes the findings which are of greatest diagnostic importance.

The author advises collecting bladder urine under precautions for sterility when the cystoscope is introduced. If one of the ureteral catheters then inserted does not evacuate any urine he introduces some of the collected urine to relieve the stasis. If renal infection is present on one or both sides and the first urine collected is turbid, the urine is rapidly boiled and cooled in a sterile test tube before it is used for injection. When the concentration of the total urine and the quantity injected are known, the concentration of the urine from the injected side can be determined.

When this method of catheterization fails, a kink may be present in the sound. Kinking of the sound may occur without the knowledge of the patient or operator. When it is suspected an X-ray examination should be made. The author leaves both the cystoscope and the sound in place and makes an X-ray examination at the beginning to determine the position of the sound and which ureter is penetrated. This avoids error which is of particular importance with regard to nephrectomy.

A. E. TAYLOR, M.D.

Wineberry White, H. P.: Excretion Urography with Per Abrodil. *Brit. J. Urol.* 93, 1, 348.

Per-abrodil is a white, odorless powder with a 31.8 per cent content of iodine in firm combination and a melting point of 246 to 247 degrees C. In aqueous solution it is very stable when boiled. It is put up in a 25 per cent solution in 30-ccm ampoules. One such ampoule is the average dose for adults, but the author has used this amount in the cases of young children without noting toxic symptoms. He

has employed the drug in over 100 cases. He states that it is of value particularly because it may be injected rapidly. It is excreted rapidly and therefore quickly gives a good shadow of the renal pelvis and, so far as his experience goes, it has no ill effects.

The injection is usually made in a minute or less, and the urograms may be made from three to twenty minutes later. If the excretion of the kidney is hampered by obstruction to drainage or other cause, the filling of the renal pelvis and the ureter with the opaque medium will be delayed.

Among the indications for the retrograde method of urography are cases in which a dilated ureter opens into a diverticulum of the bladder, cases of double ureter with a single opening into the bladder and cases of kinks of the ureter in which the use of a ureteral catheter would make the ureteral lumen appear straight. When the secretory function of the kidney falls below a certain point, excretion urography will fail to show a shadow.

The author concludes that descending urography should be employed routinely and should be supplemented by the retrograde method only when it fails to give the information desired.

CLAUDE D. BRIDGES, M.D.

Palestini, A.: An Experimental Contribution to the Study of Arteriograms of the Kidney (*Contributo sperimentale allo studio dell'arteriogramma del rene*). *Arch. med. di univ.* 93, 12, 479.

Since Schaepelemann first attempted it in 1909, arteriography has been applied variously in an attempt to study arterial disease and its results in urology. Its application to the study of kidney disease seems especially important because of the persisting confusion in the classification of diseases of the kidney. The author reviews the work which has been done in this connection and presents the results of his investigations with the use of non-diffusible oils.

In the normal kidney there is a marked variation in the number of interlobar arteries and in the origin of the interlobular arteries. It is possible to distinguish two fundamental types of kidney, one with the formation of an arch from the convex surface of which the interlobular arteries arise, and the other in which there are subdivisions of the ultimate ramifications of the interlobar arteries which go to form the interlobular arteries. In some kidneys there is a mixed arrangement.

In the study of pathological kidneys the author found that in the polycystic kidney there was early division of the arteries into the hilum into small branches which had a radial direction to the edge of the kidney where they formed ramifications surrounding the multiple cysts distributed diffusely throughout the renal parenchyma. The characteris-

tic striations in the cortex and visualization of the glomeruli were absent. In renal arteriosclerosis there were large, tortuous, irregularly filled interlobular arteries and the arcuate arteries appeared just a few millimeters beneath the margin, showing the atrophy of the cortex. The appearance of single cysts was the same as that of one of the cysts of a polycystic kidney. In interstitial nephritis the thickness of the cortex was decreased, but the interlobular arteries remained well defined. In so-called renal stasis the cortex was well preserved.

A. LOUIS ROSI, M.D.

Waters, C. A. The Value of the Roentgen Ray in the Diagnosis of Renal Tuberculosis. *Am J Roentgenol*, 1933, **xxix**, 17.

Waters discusses the value of plain films and pyelograms in examinations for renal tuberculosis. The earliest recognizable roentgen findings in renal tuberculosis are "fringing" of the calyces and calcification in areas of cortical necrosis.

Correct information is obtainable from complete roentgen studies in 70 per cent of the cases. Forty per cent of cases of known renal tuberculosis studied by the author showed areas of cortical calcification in the plain film. The findings based on direct smears were accurate in only 55 per cent. In the other 45 per cent guinea-pig inoculations gave positive evidence.

The author believes there are no contra-indications to pyelography in renal tuberculosis.

GILBERT J. THOMAS, M.D.

Noracef, D. The Leucocytic Formula in Renal Tuberculosis (La formule leucocytaire dans la tuberculose rénale). *J d'urologie méd et chir*, 1932, **xxxiv**, 391.

Investigations of the leucocytic formula in tuberculosis have generally been limited to tuberculosis of the lungs. The author has been unable to find any study of the leucocytes in renal tuberculosis. Here, with he reports the results of such a study made in forty cases observed in the Necker Hospital in Paris. On the basis of the clinical picture, the cases were divided into three groups: (1) those of beginning tuberculosis, (2) those of advanced tuberculosis, and (3) those of tuberculosis of attenuated virulence.

From his findings the author draws the following conclusions:

1. Renal tuberculosis produces characteristic cell changes in the blood, and the leucocytic formula may be considered important in the diagnosis.

2. All forms of renal tuberculosis show a hyperleucocytosis and an increase of the neutrophils with undivided nuclei (deviation toward the left).

3. From the total number of neutrophils, mononuclears, and eosinophiles, the stage of development of the disease may be deduced.

4. In early cases the percentages of these cells are little changed.

5. In advanced cases, a hyperneutrophilia is found.

6. In chronic tuberculosis with attenuated resistance, the mononuclears and eosinophiles are increased.

ELLA M. SALMONSEN

Melina, F. Permanent Torsion of the Remaining Kidney Following Unilateral Nephrectomy (Torsione permanente del rene residuo in seguito a nefrectomia monolaterale). *Arch ital di urol*, 1932, **ix**, 495.

In experimental studies of the anatomical and functional changes due to torsion of the remaining kidney after unilateral nephrectomy Melina found that the kidney can withstand a torsion up to 180 degrees, but a torsion greater than that endangers the animal's life. Torsion within 180 degrees did not result in any evidence of hydronephrosis.

The lesions that follow permanent torsion are due to the disturbances of the circulation. They involve principally the tubular epithelium and, to a lesser degree, the interstitial connective tissue. In some areas Melina found the lesions advanced, but in others he noted evidence of regression and repair.

Functional equilibrium was re-established within fifteen days, with the return of adequate circulation in the kidney.

PETER A. ROSI, M.D.

Hamer, H. G., Mertz, H. O., and Wishard, W. N., Jr. Ureteral Granuloma. *J Urol*, 1933, **xxix**, 43.

The authors state that the symptoms of granuloma of the ureter are not definite and the diagnosis is difficult. In the case reported in this article nephrectomy and ureterectomy were done because of great loss of blood and the roentgen signs of tumor. As bleeding occurred from the other side, the question as to whether the condition is bilateral in all cases is raised.

DONALD K. HIBBS, M.D.

Ormond, J. K. Some Experimental Work on the Site for Ureteral Transplant. *J Urol*, 1933, **xxix**, 15.

The author reports studies of the cæcum as a site for transplantation of the ureter which were undertaken because of the death of a patient within three months after an operation in which it was necessary to transplant the ureter into the cæcum on account of involvement of the sigmoid by a tumor. The studies were carried out on four monkeys. The right ureter was transplanted into the cæcum and later the left kidney was removed. All of the results were poor. The author concludes that such an operation is useless as the products normally excreted in the urine are re-absorbed by the blood stream and cause uræmia.

DONALD K. HIBBS, M.D.

BLADDER, URETHRA, AND PENIS

Le Fur, R. Bladder-Neck Disease (La maladie du col vésical). *Bull et mém Soc d'chirugiens de Par*, 1932, **xxiv**, 512.

Le Fur applies the name "bladder-neck disease" to a syndrome which is characterized by difficulty

of urination with complete or incomplete vesical retention occurs ordinarily in men between thirty five to forty years of age but occasionally also in men who are older corresponds anatomically to a small and atrophied prostate with diminution of the caliber of the bladder neck by sclerosis, a bar, or a valve and is cured by section or complete ablation of the bladder neck. Some surgeons have designated it as "prostatism without prostate" there being no prostatic hypertrophy.

The condition may evolve without infection of the bladder but in some cases attacks of bladder infection may be caused by the colon bacillus, enterococcus, or staphylococcus. Sometimes the stricture of the neck of the bladder is due to gonorrhea.

In discussing the surgical treatment Le Fur says that Ley's operation of foreskin of the prostate and bladder neck is appropriate, especially when there is a simple obstruction due to enlargement of the lower lip of the bladder neck. In total sclerosis of the bladder neck complete destruction of the bladder neck through a suprapubic incision is indicated.

The transurethral route of approach is preferred by the author. The bladder is widely opened and the bladder neck region well exposed. A complete circular incision is made at a distance of about 1 cm from the neck. The bladder-neck muscle or the sclerosed tissues of the neck are then grasped with Kocher forceps at four points. The excised tissue and all irregular sclerosed masses are then trimmed with curved scissors or the bistoury so as to form a shallow trench at the site of the bladder neck which will permit ablation of the neck.

Hemorrhage is best controlled with tampons. The tampons are removed after two or three days, and the suprapubic drainage is discontinued after from eight to ten days. Urethral dilatation is begun early immediately after removal of the urethral retention sound, and is continued for a long time.

Le Fur reports two typical cases treated according to the described technique with very satisfactory results. The first was a case of diffuse sclerosis of the bladder neck with total stricture, and the second a case of valve of the bladder neck which caused only partial occlusion of the neck. *ELLA M. SACCOMANI*

De Barne-Lagarde: Double Urethra (Les urethres doubles). *Arch. d. med. et anat. d. organes génito-urinaires* 92 7th, 59.

The first complete study of double urethra was made by Picardat in 1876. In 1917 Chauvin classified the various types as follows:

1. True complete double urethra.
2. Blind para-urethral canals.
 - a. Opening into the bladder (rare)
 - b. Opening on the skin surface as blind passages situated internally below the urethra or dorsally
3. Bifurcations of the urethra, which may be posterior, anterior or inferior.

In the author's opinion only the canals located above the urethra are true accessory urethra. The

orifice is usually at about the middle of the dorsum of the penis. Less commonly it is in the retrograde sulcus or at the extremity of the glans. Anterior to the orifice there is often a groove. The normal urethra may show a certain degree of hypoplasia. Ordinarily the canal lies immediately beneath the skin, but in some cases it may run between the corpora cavernosa. Its caliber varies from 1 to 10 mm. The tract may be only a few millimeters long or may extend to the symphysis pubis or the prevesical space. Occasionally it communicates with the normal urethra and more rarely with the bladder.

Although few studies have been made of its structure, it seems to be identical with that of the normal urethra.

The authors review the embryology of the urethra in detail and discuss the theories advanced to explain the formation of accessory passages. They conclude that accessory passages have their origin in ectopia of the urethral lamina when this is formed by the partitioning of the cloaca.

The symptoms caused by accessory urethra depend upon the type. Unless infected by the gonococcus, the blind type opening on the skin surface may remain undiscovered. Urine in small amounts usually escapes when there is a communication with the urethra or bladder. When the opening into the bladder is outside the sphincter there is incontinence.

An accurate diagnosis of the type of the tract can be made by simultaneous exploration of the normal and the accessory urethra with sounds and dilators bougies alone or with the urethroscope or by roentgenography of the passages after their injection with an opaque medium.

The simplest treatment is incision of the tract to put it into communication throughout its length with the skin or the urethra. When feasible complete excision is the method of choice. Cauterization is dangerous and rarely produces a permanent cure.

The author reviews thirty four cases collected from the literature. The earliest case was reported by Marchal in 1853. The author reports two cases from the service of Papin.

ALBERT F. DA GROSZ, M.D.

GENITAL ORGANS

Hymas, J. A., and Kratzer, S. E. Prethrotic (the Vesical Neck). *Am. J. Surg.* 933, 375, 19.

To determine the causes and pathological changes of vesical neck fibrosis a careful gross and histological study was made of the region lying between the lateral ureteral ligament and the ejaculatory ducts. It was found that infection of the mucosa and submucous groups of glands in the posterior urethra, vesical neck, and trigone caused changes in the posterior urethra and vesical neck. The inflammatory elevation at the vesico-urethral orifice involving the retroplebic area and the glandular adenoma has been termed "prethrotic bar." The study reported included the seminal vesicles, ejaculatory ducts, verumontanum and prostate because it was soon

determined that repeated infections of the sub-mucosal glands originated in these parts

Eighty-four specimens were subjected to microscopic study of serial sections. Some showed active suppurative lesions of the prostate or the periprostatic or vesicular areas, and others an active acute or subacute urethral and vesical neck inflammation with indefinite prostatic or vesicular inflammation. A third group presented cicatricial changes with abnormalities of the prostatic ducts, urethra, and verumontanum. In one group of cases the specimen showed few changes, but there were lesions in the upper urinary tract.

Celloidin corrosion casts were made of sixty specimens for gross study and the findings checked with microscopic study of the prostate and vesicles without serial sections. Examination of several hundred autopsy specimens revealed a higher incidence of inflammatory changes than could be demonstrated by palpation alone. Additional specimens obtained from the posterior vesical lip with the McCarthy punch in proved cases of median bar were studied and compared with similar autopsy material. A study of sixty-two specimens of acute, subacute, and chronic prostatitis showed similar conditions in the accessory glands on the posterior vesical lip and the trigone with inflammatory changes of the posterior vesical lip. Inflammation in the vesical neck was accompanied by inflammation of the prostate in like degree. Thirty per cent of the specimens showed changes in the verumontanum and ejaculatory ducts, and 20 per cent changes in the vesicles.

Cases of prefibrotic elevations are classified as follows: (1) those with acute inflammatory changes in the vesical neck and posterior urethra, (2) those of subacute prostatitis with involvement of the posterior urethra and vesical neck, and (3) those of prefibrotic elevations with scirrhous changes in the retropubic area and chronic inflammation of the adnexa. The average age of the patients was forty-five years. In 25 per cent of the cases gonorrhoea was denied. Other local conditions, such as stricture, were occasional factors.

A careful study of the history and a thorough physical examination are necessary for the diagnosis of prefibrotic bar.

The treatment should be directed toward the source of the inflammation. Operative removal is very definitely contra-indicated. It should be reserved for the terminal or quiescent fibrosis.

CLAUDE D. PICKRELL, M.D.

Ross, N. Radiographic Diagnosis of Prostatic Enlargement. *Lancet*, 1933, cccxv, 14.

In the diagnosis of prostatic obstruction rectal palpation alone is often misleading. Only by cystoscopic examination or aërocystography may senile enlargement and prostatic bar obstruction be differentiated. Cystoscopy may be rendered impossible by obstruction due to contraction of the bladder neck, hemorrhage or gross sepsis obscuring vision, severe pain, or the lack of an expert cystoscopist.

From a series of thirty cases the author has come to the conclusion that aërocystography is just as reliable as cystoscopy and in certain cases is superior to the latter. The technique is simple. The distended bladder is decompressed by the usual method and the colon is cleared out. The bladder must be empty. Through a No. 5 catheter, air is gently introduced into the bladder with a 20- or 50-cm. record syringe. When the positive pressure within the bladder is sufficient to push the plunger back, the bladder is filled to capacity. More than 300 c.cm. of air may be required to fill it. The kilovoltage of the tube should be between 40 and 50. An anterior roentgenogram gives all information necessary.

The interpretation is easy. The normal bladder outline is usually circular and smooth. If the roentgenogram is made at the correct angle, the lower part of the bladder will be about $\frac{1}{4}$ in. above the pubic bones. If an intravesical enlargement of the middle and lateral lobes is present there will be a definite conical projection upward from the base of the bladder. The edges are continuous with those of the inferior bladder margin. If the outline is smooth and regular, an adenoma may be suspected, but if the outline is irregular or limited to one lobe, malignancy may be present.

If the symptoms of obstruction are present but instead of the conical enlargement there is an indefinite blurring around the sphincter, a diagnosis of bar obstruction of the glandular type such as is seen in hypertrophy of Albarran's tubules is usually made. A large fibrous bar will appear at the base as a straight horizontal mass extending from side to side and projecting from $\frac{1}{4}$ to $\frac{1}{2}$ in. above the lower margin.

Valuable information may be obtained by this method also concerning pathological changes in the bladder and bladder wall. The findings have been confirmed at operation. Postoperative tags may be visualized.

In conclusion the author emphasizes that aërocystography is a valuable adjunct to other methods in the diagnosis of prostatic obstruction and bladder conditions and can be used when cystoscopy is impossible. The technique is simple and the danger is limited. The examination is practically painless.

CLAUDE D. PICKRELL, M.D.

Gaudy, J. The Irradiation Treatment of Prostatic Adenomata (Le traitement radiothérapique de l'adenome prostatique). *Bruxelles-méd.*, 1932, xii, 1.

At the request of the Belgian Society of Urology, Gaudy made an analysis of the effect of irradiation therapy on prostatic hypertrophy. He states that irradiation of living tissue may be followed by slight functional disturbance, temporary cessation of function, or death of the tissue. According to Bergonie's law, the most actively dividing cells are most sensitive to irradiation.

In the practice adopted today, X-ray irradiation of the prostate is carried out with from 100,000 to 200,000 volts, a filter of from 0.5 to 1.0 mm. of cop-

per and a filter of from 0.5 to 1.0 mm. of aluminum. The anticathode is generally placed from 30 to 50 cm. from the skin, and four portals of entry two anterior one perineal, and one posterior are used. The dose is spread out over a period of from eight to twelve days in order to avoid the reactions that may result from massive doses.

As the histological changes that result from irradiation have been insufficiently studied, no definite statement can be made about them. With regard to the effect of this form of treatment on the symptoms, clinical signs, and general course of the disease there are conflicting views. The definite contraindications are infections of the bladder and prostate. Diabetics tolerate irradiation poorly.

The best results are obtained in cases of hemorrhage in prostatic hypertrophy in which the bleeding is easily and quickly controlled. As a rule this form of therapy alleviates pain, tenesmus, polyuria and priapism when they are due to congestion of the prostate but occasionally it makes them worse. Many urologists have reported series of cases in which the retention has apparently been reduced, whereas others have noted no change or have found that incomplete retention was converted into complete retention. Urologists differ in their estimate of the amount the prostate shrinks under X-ray treatment. Few have reported cystoscopic findings before and after the treatment.

The author believes that in most cases this type of therapy has only a transitory value. He maintains that it does not greatly change the course of the disease and that as a rule the patient eventually requires a prostatectomy which is made more difficult by the increased fibroids. He concludes that the chief indications for irradiation therapy are the control of bleeding and the cases of patients who refuse or cannot withstand prostatectomy.

Radium therapy has been carried out by placing the element against the tumor through the urethra or introducing it in a container into the rectum. No mention is made of the introduction of radium-emanation seeds into the tumor through the perineum. Gandy believes that radium implantation has more to offer than X-ray irradiation, but that it has not yet been adequately studied or developed.

JOHN W. ELLER, M.D.

Mackenzie, D. W.: Fibrosarcomas of the Spermatocord. The Report of a Case and a Review of the Literature of Cord Tumors. *Br. J. Urol.* 1933; 1: 307.

In a review of the literature the author was able to find records of 197 cases of tumor of the spermatic cord. These growths are variously classified according to their pathological character. The author prefers the classification of Rubaschow which divides them into (1) embryonal growths, including teratomata, dermoids, and heterologous tumors such as myxosarcoma, fibrosarcoma, and myxothelioma, and (2) growths arising from local tissues, such as lipoma, fibroma, myxoma, and sarcoma.

These tumors generally occur on the left side. They may develop at any age. Symptoms may be absent until they become large, when their weight may produce a dragging sensation. The differential diagnosis from other conditions in the inguinal canal and scrotum may be difficult. Although the benign tumors grow slowly they may undergo sarcomatous degeneration. The malignant tumors grow rapidly and metastasize early.

In cases of benign growths, simple excision is sufficient. In cases of malignant growths, removal of the tumor, the testis, the epididymis, and as much of the cord as possible should be done and followed by deep X-ray therapy. HARRY L. SAMPSON, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Reischauer, F. **Trauma and Haematogenous Bone Infection** (Trauma und haematogene Knocheninfektion) *Beitr z klin Chir*, 1932, clvi, 411

This is a discussion of the causative relationship between trauma and osteomyelitis and trauma and tuberculosis of bone

The author states that there is only one sure way of judging the rôle played by trauma in the development of osteomyelitis, viz, investigation of the causes of spontaneous osteomyelitis. As yet, the latter have not been entirely explained. The predominance of the staphylococcus aureus in the infection suggests an organ-specific sensitivity of the bone marrow. The author agrees with Sobernheim that the causative organism may gain entrance to the body through the intact mucosa as well as through peripheral inflammatory lesions. The sporadic, transient sojourn of staphylococci in the normal marrow is denied. Such organisms as are carried by the circulation are promptly destroyed by the normal marrow. The author examined bacteriologically specimens of marrow obtained from fourteen patients in operations on bones. Five of the patients were young persons in the osteomyelitis age period. The cultures remained sterile. The theory that bacteria may vegetate in the healthy bone marrow is purely speculative.

The curve representing the incidence of acute osteomyelitis according to age periods shows a sharp dip downward at the eighteenth year. The disease is three times more frequent in males than in females. Accordingly, there is a specific sensitivity to it which is related to age and sex.

Acute osteomyelitis attacks the metaphysis, the zone where the cell-proliferating processes and the tissue metabolism are most active. Failure of the bactericidal forces of the marrow reticulum in the periods when the metaphysis is subjected to special biological demands is a possibility which has not yet been investigated. Nevertheless one still often hears the unfounded assertion that a trauma is the cause of decreased resistance to infection.

Cited in order of decreasing frequency of involvement, the metaphyses most often affected are the lower end of the femur, the upper end of the femur, and the upper end of the humerus. This sequence is due to the rate of growth of the different regions and not, as claimed by Thiem, to more frequent involvement of the lower extremities by trauma. Clinical study of acute osteomyelitis therefore shows that the condition occurs only where new bone is developing and corresponds to the period of development and the rate of growth.

The theory that trauma is of importance in the causation of this condition is based solely on the apparently positive results of animal experiments and assertions from lay sources. The results of animal experimentation preceding those of Lexer and consisting of massive blood inoculations and the production of severe traumata and fractures proved nothing, and because of the specific pathogenicity and the biological characteristics of pus organisms in the rabbit, even Lexer's results are not applicable to this problem. Osteomyelitis does not follow surgical operations on intact bones even in the age periods predisposed to this condition. Haematogenous suppuration of a fracture is rare. A history of trauma is given with about equal frequency in cases of acute osteomyelitis as in those of bone cyst and osteogenic sarcoma. Trauma serves as an explanation in cases in which too little is known with certainty regarding the cause. The frequency of injuries in sports during the age periods predisposed to osteomyelitis and the marked infrequency of osteomyelitis following accidents in sports also speaks against the assumption of an etiological rôle of trauma. The theoretical possibility of a weakening of the protective function of the tissues without determinable anatomical changes has not been proved.

Following this clinical discussion the author takes up the subject of forensic practice. He states that trauma may be regarded as a factor in the development of osteomyelitis only when the injury was severe, there is a close correspondence between the site of the trauma and the site of the suppuration, and the inflammatory process followed the injury within five or six days. All of these requirements must be met. In cases of chronic osteomyelitis and those of bone abscess the intermediate symptoms must have been present at least fourteen days since the accident. In cases with a fulminating course the shortest interval between the injury and the appearance of the inflammation must not have been less than twelve hours. When these requirements are met, about 5 per cent of the cases may be given recognition.

With regard to the relation of tuberculosis of bone to trauma the author states that negative clinical and roentgenological findings do not exclude the possibility that bacilli from some focus in the body are entering the circulation. Massive emboli are not necessary for infection of the skeletal structures, the dissemination of isolated bacilli is sufficient. According to recent statistics, the development of tuberculosis of bones and joints may be ascribed to trauma in not more than 1 per cent of the cases. The most common relationship claimed is aggravation of tuberculosis already present. Such a re-

per and a filter of from 0.5 to 1.0 mm. of aluminum. The anticathode is generally placed from 30 to 50 cm. from the skin, and four portals of entry two anterior one perineal, and one posterior, are used. The dose is spread out over a period of from eight to twelve days in order to avoid the reactions that may result from massive doses.

As the histological changes that result from irradiation have been insufficiently studied, no definite statement can be made about them. With regard to the effect of this form of treatment on the symptoms, clinical signs, and general course of the disease there are conflicting views. The definite contraindications are infectious of the bladder and prostate. Diabetics tolerate irradiation poorly.

The best results are obtained in cases of tumor stage in prostatic hypertrophy in which the bleeding is easily and quickly controlled. As a rule this form of therapy alleviates pain, tenosimus, polyuria, and priapism when they are due to congestion of the prostate, but occasionally it makes them worse. Many urologists have reported series of cases in which the retention has apparently been reduced, whereas others have noted no change or have found that incomplete retention was converted into complete retention. Urologists differ in their estimate of the amount the prostate shrinks under X-ray treatment. Few have reported cystoscopic findings before and after the treatment.

The author believes that in most cases this type of therapy has only a transitory value. He maintains that it does not greatly change the course of the disease, and that as a rule the patient eventually requires a prostatectomy which is made more difficult by the increased fibrosis. He concludes that the chief indications for irradiation therapy are the control of bleeding and the cases of patients who refuse or cannot withstand prostatectomy.

Radium therapy has been carried out by placing the element against the tumor through the urethra or introducing it in a container into the rectum. No mention is made of the introduction of radium-emanation seeds into the tumor through the perineum. Gandy believes that radium inspiration has more to offer than X-ray irradiation, but that it has not yet been adequately studied or developed.
JOHN F. ERNE, M.D.

Mackenzie, D. W.: Fibrosarcoma of the Spermatic Cord. The Report of a Case and Review of the Literature of Cord Tumors. *Brit J Urol* 33, 14-307.

In a review of the literature the author was able to find records of 197 cases of tumor of the spermatic cord. These growths are variously classified according to their pathological character. The author prefers the classification of Rubenshaw which divides them into (1) embryonal growths, including teratomas, dermoids, and heterologous tumors such as myxosarcoma, fibromyxosarcoma, and neuroepithelioma, and (2) growths arising from local tissues, such as lipoma, fibroma, myxoma, and sarcoma.

These tumors generally occur on the left side. They may develop at any age. Symptoms may be absent until they become large, when their weight may produce a dragging sensation. The differential diagnosis from other conditions in the inguinal canal and scrotum may be difficult. Although the benign tumors grow slowly they may undergo successive degeneration. The malignant tumors grow rapidly and metastasize early.

In cases of benign growths, simple enucleation is sufficient. In cases of malignant growths, removal of the tumor, the testis, the epididymis, and as much of the cord as possible should be done and followed by deep X-ray therapy. HARRY L. SAMPSON, M.D.

trauma to the soft parts, but muscle spasm and tenderness persist with marked pain. Vasomotor disturbances are slight, but the roentgenogram reveals diffuse mottling of the bones. These milder cases should be treated in the same manner as the severe cases.

Pathological studies, which have been made in only a few cases, show diminution of the spongy medullary bone, enlargement of the haversian canals, thinning of the cortex, and replacement of the medulla by fat.

Until recently the treatment has been symptomatic, consisting in the use of immobilization, heat, physical therapy, and glandular products. As a rule the results have been unsatisfactory. Since 1924 periarthral sympathectomy has been done in all cases admitted to the clinic of Leriche. The results have been gratifying. The authors report twenty-one cases in detail. In nine, the wrist was involved, in seven the ankle, and in five the shoulder. In the majority of the cases the operation resulted in complete relief. When the disease was limited to the bones of the wrist or ankle, a simple periarthral sympathectomy was done, but when all of the bones of an extremity were involved a sympathetic ramisection or ganglionectomy was performed.

The authors conclude that post-traumatic osteoporosis is an entity which, if left untreated, usually results in long disability and ankylosis. They urge early recognition of the condition and early treatment by appropriate operations on the sympathetic nervous system.

The article is supplemented by an extensive bibliography. CHESTER C. GUY, M.D.

Moore, S. A Discussion of the Diagnosis and X-Ray Treatment of Malignant Disease of Bone. *Am J Surg*, 1932, xviii, 403.

The skeleton is better understood than many other parts of the body because of the facility with which it can be studied with the roentgen ray. However, roentgen-ray examination is not employed generally enough in the classification of bone malignancies. A very small percentage of malignant growths involve the bones and fewer still are primary in the bones.

The author regards Kolodny's classification of malignant tumors of bone as a good one, but suggests the following more simple classification: (1) tumors originating from tissue included within the bone, (2) bone tumors proper, and (3) tumors originating from the investments of the bones.

Osteogenic sarcoma spreads rapidly into blood spaces and vessels along the areolar tissues and for distances which cannot be suspected. It rarely infiltrates adjacent bones or metastasizes to remote portions of the skeleton. It metastasizes by blood-stream distribution and does not involve the lymphatics. Its metastases are pulmonary.

Mielomata spread more slowly, but ultimately tend to involve the entire marrow system with

varying degrees of destruction of the containing bone.

Giant-cell sarcoma has only a slight tendency to invade surrounding parts, does not metastasize, and only rarely recurs after excision or amputation. When it is given proper early treatment the prognosis is good.

Metastatic hypernephroma causes much confusion in the diagnosis of bone lesions. It may form a single focus in a single bone or have a wide distribution throughout the skeleton. It forms metastases in the lungs. Roentgenologically it may simulate osteogenic sarcoma in its focal and pulmonary distribution. In the presence of multiple skeletal foci and characteristic findings in the lungs the neoplasm may safely be regarded as a hypernephroma rather than a bone sarcoma.

Epithelial tumors metastatic to bone are easily confused with malignant tumors primary in the bones. However, patients with metastatic epithelial tumors are usually older than those with bone sarcoma, and the metastases of epithelial tumors are usually multiple. Moreover, epithelial tumors rarely metastasize distal to the most outlying lymph nodes, namely, those at the elbow and knee.

Bone metastases from melanomata have never been observed.

Irradiation given as palliative treatment should be employed late as it tends to become less efficient. In cases of involvement of the spine in which the pain cannot be controlled with morphine irradiation often gives relief. When surgery is indicated it should be radical and performed above the joint proximal to the growth. In cases of pathological fracture of the extremities, great swelling, fungus formation, and ulceration, amputation or excision should be followed by irradiation. In cases of giant-cell tumors, irradiation should be tried before surgery is considered unless a joint is involved. A useful therapeutic adjunct in cases of malignant bone disease is Coley's toxin treatment.

ARTHUR H. WEILAND, M.D.

Kay, J. A. The Production of Chronic Arthritis by the Injection of Weak Acids, Alkalies, Distilled Water, and Salt Solution into Joints. *J Bone & Joint Surg*, 1933, xi, 67.

The author presents the results of a series of experiments in which chronic progressive arthritis was produced in animals by the repeated injection into the joints of weak acids, weak alkalies, distilled water, or salt solution.

Normal adult rabbits were used. The fluids injected were N/50 HCl, N/50 NaOH, distilled water, a 0.85 per cent solution of NaCl, and a 10 per cent solution of NaCl. From 1 to 2 c.c. of the fluid were injected into each knee joint three times a week, and from eight to twenty-eight injections were given. Examinations of the joints were made from one to eighty-five days after the last injection.

As postmortem cultures of the joints yielded no growth, it may be assumed that the pathological

relationship may be assumed only if the injury was sufficiently severe to produce an aggravation of the condition the subsequent course of the condition was definitely different from the usual course, and the evidences of aggravation of the condition were noted within three or four days after the injury. Other relational possibilities, particularly the possibility of a site of diminished resistance are more than questionable. Localization due to trauma requires the previous presence of bacilli in the circulating blood. The frequency of tubercle bacilli in the blood stream is not yet known definitely. However in numerous operations performed on the bones and soft parts in the recognized presence of a bacillæmia in clinical cases, localization of tuberculosis has never been demonstrated. With regard to animal experimentation in this connection, the author cites Zollinger's criticism.

The next question to be discussed is that of mobilizing trauma. Reischauer states that according to clinical and roentgenological studies, latent foci are very rare and he was unable to find a latent focus in any of the cases of bone and joint disease admitted to the Breslau Clinic in a period of five years. The theory that trauma may mobilize bacteria present in normal bone tissue is to be rejected because of lack of proof. The only theory which has any basis in fact is that of the aggravation of bone tuberculosis already in the process of development.

In conclusion Reischauer says that it remains doubtful whether trauma is of any noteworthy importance in the origin or localization of osteomyelitis or tuberculosis of bone.

(HARRIS Z)

Fontaine, R., and Herrmann, L. G.: Post Traumatic Painful Osteoporosis. *Am Surg* 933, 1924, 86

Bones are not inert supporting structures with a fixed and unchangeable constitution, but react as do other tissues in the body.

Following trauma, with or without fracture, there occurs frequently an osteoporosis associated with pain and vasomotor disturbances which resists all ordinary forms of treatment and is very disabling. This is usually attributed to disease of the part, but may occur too rapidly to be thus explained and is seen in extremities not subjected to immobilization.

According to another theory it is due to reflex disturbances of the vascularity of the bone as anemia resulting in a deficiency in the supply of calcium salts brought to the bone. This theory is disproved by the infrequency of the disorder after ligation of the principal artery of an extremity either from necessity in human beings or experimentally in animals.

Osteoporosis is rare after fractures of the shaft, but common after trauma to the periarticular or juxta-articular regions, with or without fracture. It is especially frequent after injuries to the ankle and wrist.

The authors believe that trauma to the tissues in the neighborhood of joints produces reflex vaso-

motor changes which in turn cause an early local hyperemia that may be noted clinically and by oedimetric studies. This hyperemia is a necessary factor for the absorption of bone although it may be followed in a later stage by vasoconstriction and anemia.

Osteoporosis is most common in the short bones of the hands and feet. It occurs frequently also in the metatarsals, metacarpals, and phalanges, and occasionally in the epiphyses of the long bones. In some cases it has been found in the flat bones of the skull. True osteoporosis is associated with pain and vasomotor disturbances, being thus distinguished from osteoporosis due to disease. It is of four main types: the post-traumatic, the post-infection, the type associated with nerve disorders, and the dystrophic type associated with altered ovarian function.

This article deals only with the post-traumatic type. In its true form it is always characterized by:

1. Loss of motor function, which is marked and out of proportion to the extent of the trauma.
2. Pain, which is acute, of greater severity than is accounted for by the trauma, and not relieved by immobilization.
3. Vasomotor disturbances, which are constant and include cyanosis, edema, a sensation of cold, atrophy of the skin and pain. Hyperthermia is usually marked, but the oedimetric index is the most reliable criterion of the extent of vasomotor change.

The roentgenological findings indicate that there are two main forms of post-traumatic osteoporosis, the acute and the chronic. The acute form comes on rapidly in a few weeks and is characterized by a marked mottling mainly in the carpal and tarsal bones and a thinning of the cortex such that the outlines of the individual bones are frequently lost. In the chronic form there is a diffuse rarefaction with thinning of the horizontal lamellæ. These changes seem to divide themselves into three stages: the onset, the height of the disease and the period of re-organization. They may be so marked in the second stage that a diagnosis of tuberculous osteoarthritis is made. The duration of the stages is variable but the first two are rather rapid and the third is slow. It is the slowness of recovery that frequently long period of disability, sometimes resulting in permanent crippling, which makes important the proper diagnosis and treatment of this disorder.

In the diagnosis three main clinical groups of cases are distinguished. In the first group slight or moderate trauma to the wrist or ankle is followed by pain with vasomotor disturbances and limitation of motion developing over a period of several weeks, at the end of which time the roentgenogram reveals the marked osteoporosis so frequently diagnosed as tuberculous osteoarthritis. In cases of the second group there has been a fracture which has been properly reduced, but the symptoms continue. In cases of the third group there has been only slight

trauma to the soft parts, but muscle spasm and tenderness persist with marked pain. Vasomotor disturbances are slight, but the roentgenogram reveals diffuse mottling of the bones. These milder cases should be treated in the same manner as the severe cases.

Pathological studies, which have been made in only a few cases, show diminution of the spongy medullary bone, enlargement of the haversian canals, thinning of the cortex, and replacement of the medulla by fat.

Until recently the treatment has been symptomatic, consisting in the use of immobilization, heat, physical therapy, and glandular products. As a rule the results have been unsatisfactory. Since 1924 perarterial sympathectomy has been done in all cases admitted to the clinic of Leriche. The results have been gratifying. The authors report twenty-one cases in detail. In nine, the wrist was involved, in seven the ankle, and in five the shoulder. In the majority of the cases the operation resulted in complete relief. When the disease was limited to the bones of the wrist or ankle, a simple perarterial sympathectomy was done, but when all of the bones of an extremity were involved a sympathetic ramisection or ganglionectomy was performed.

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ARTHUR H. WEILAND, M.D.

Key, J. A. The Production of Chronic Arthritis by the Injection of Weak Acids, Alkalies, Distilled Water, and Salt Solution into Joints. *J. Bone & Joint Surg.*, 1933, XV, 67.

The author presents the results of a series of experiments in which chronic progressive arthritis was produced in animals by the repeated injection into the joints of weak acids, weak alkalies, distilled water, or salt solution.

Normal adult rabbits were used. The fluids injected were N/50 HCl, N/50 NaOH, distilled water, a 0.85 per cent solution of NaCl, and a 10 per cent solution of NaCl. From 1 to 2 c.cm. of the fluid were injected into each knee joint three times a week, and from eight to twenty-eight injections were given. Examinations of the joints were made from one to eighty-five days after the last injection.

As postmortem cultures of the joints yielded no growth, it may be assumed that the pathological

changes occurring in the injected joints were caused by the solution injected.

The joints with acute arthritis (one to three days) contained a moderate excess of cloudy, straw-colored fluid which showed large numbers of leucocytes and macrophages. In the joints with subacute arthritis (five to ten days) the leucocytes had disappeared. In the joints with chronic arthritis (from twenty-eight to eighty-five days) the fluid was decreased in amount and relatively clear, and contained only a moderate number of macrophages.

In the joints with acute arthritis the articular and adipose areas of the synovial surface exhibited an acute inflammatory reaction with hypertrophy and hyperplasia of the fixed tissue cells and infiltration of the tissues with leucocytes and small and medium-sized round cells. In the joints with subacute arthritis the leucocytes had largely disappeared, but the round-cell infiltration was more marked and the hyperplastic tissues tended to invade and overlap the margins of the articular cartilage. In the joints with chronic arthritis the fixed tissue cells were about normal in size, but the synovial tissues were moderately thickened and infiltrated with small and medium-sized round cells.

In the articular cartilage a variable number of cartilage cells were killed with occasional separation of the superficial cartilage from the deep calcified zone. Occasionally the cartilage necrosis was sharply localized, but as a rule it was diffuse and especially marked over the bearing surfaces of the joint. In joints with considerable cartilage necrosis there was a variable amount of marginal proliferation of the articular cartilage.

When the articular cartilage was eroded the underlying bone became eburnated and the bone cells near the exposed surface died. These changes were accompanied by proliferation of cartilage and bone around the margins of the cartilage and beneath the adjacent periosteum which caused deformity of the joint. The joints did not tend to become ankylosed by fibrous tissue or bone.

From these experiments it is evident that the articular cartilage is the most vulnerable of the joint tissues, and that the effect of repeated minor injuries to the cartilage is cumulative.

Chronic arthritis represents the response of a joint to injury. If the injury is limited to the articular cartilage and the joint continues to function, hypertrophic arthritis results regardless of the type of the injury. If the injury is due to an acute infection, the result is a pyogenic arthritis and the ultimate outcome depends upon the amount of destruction occurring before the process is arrested. If the injury is a chronic irritation affecting chiefly the synovial tissues, the result is atrophic arthritis.

NORMAN C. RULLOCK, M.D.

Wetherby, M.: Chronic Arthritis: A Clinical Analysis of 330 Cases. *Arch. Int. Med.* 1913, 4, 946.

Of the 330 patients whose cases were studied by the author 63.57 per cent were women and 31.43

per cent were men. In both sexes the incidence of the condition was highest in the fifth decade. The duration of the symptoms was over one year in 58 per cent of the cases and over five years in 55 per cent.

Monarticular involvement was present in only 5 of the 330 cases. A study of the incidence of involvement of the various joints showed that the knees were affected in 82.8 per cent of the cases, the fingers in 68.1 per cent, the ankles in 58.3 per cent, the spine in 47.1 per cent, the shoulders in 37.1 per cent, the wrists in 30 per cent, the hips in 44.6 per cent, and the elbows in 42.6 per cent.

Certain definite sex differences were noted in the distribution of the involvement, the fingers, hands, and toes being considerably more frequently involved in women than in men, and the spine, hips, and feet being more frequently involved in men than in women. There was also a marked difference between the sexes in the joints which were most severely involved, the fingers being most seriously affected in 6.6 per cent of the women and only 0.9 per cent of the men, whereas the spine was most severely affected in 40 per cent of the men and only 5 per cent of the women. Rheumatic disease of the heart occurred in 7 (2.1 per cent) of the 330 patients.

In 103 (31.2 per cent) of the cases the arthritis was apparently preceded by a streptococcal infection. The more common preceding sources are dental infection, sinusitis, acute respiratory infection, tonsillitis, puerperal sepsis, and the puerperum without known infection. In 15 cases, polyarthritis immediately followed definite trauma.

In 94 (28.5 per cent) of 300 consecutive cases of arthritis subcutaneous nodules were found.

Of 50 consecutive cases, roentgen examinations of all painful joints showed a pure type of involvement in only 33.3 per cent a mixed type in 57.3 per cent, and no positive findings in 8.3 per cent.

PHILIP LARUE, M.D.

Dickson, J. A., and Crosby, E. H.: Periarthritis of the Shoulder: An Analysis of 200 Cases. *J. Am. Med. Ass.* 91, July, 25.

In an effort to elucidate the relationship of trauma, foci of infection, and metabolic factors in the etiology of periarthritis of the shoulder and to determine the most efficacious treatment for this condition, the authors analyzed a series of 200 cases which came under their care during the last nine years. They use the term "periarthritis of the shoulder" because it describes the clinical entity better than "painful shoulder," "subdeltoid bursitis," "subacromial bursitis," or "calcification of the supraspinatus tendon."

Periarthritis of the shoulder is a distinct entity with a more or less constant clinical syndrome. The authors omitted from their study all cases in which the condition followed a definite dislocation, fracture about the shoulder, or complete tearing of the supraspinatus tendon by severe injury as described by Codman.

In the typical case of the condition under discussion there is either no history of injury or the patient attributes his disability to such a trauma as excessive work in the garden, washing windows, or a slight twist after throwing a baseball or playing golf. Under the latter circumstances it is always questionable whether the alleged accident had anything to do with the condition found in the shoulder.

Periarthritis is found as often in males as in females, and in over 80 per cent of the cases it develops after the age of forty years. The right shoulder is involved more frequently than the left, but the condition is often bilateral.

The authors' analysis suggests that foci of infection and glandular dysfunction are much more important in the causation of the condition than trauma, but their exact importance is difficult to evaluate. The fact that calcium deposits are found in approximately the same percentage of all groups of cases regardless of whether traumatic, infectious, or glandular factors predominate indicates that there is some common underlying alteration in the physical state which determines the deposition of calcium. In 1917, Brichner suggested that some metabolic fault may be an etiological factor. However, whatever the general factors, there must be a local disturbance which predisposes to the formation of the calcium deposits about the shoulder.

From their study of 200 cases the authors conclude that the clinical syndrome of periarthritis of the shoulder is not influenced by the presence or absence of calcium deposits, and the presence of calcium is not an indication for operation. Foci of infection and glandular dysfunction seem to be much more important as etiological factors than trauma.

The deposition of calcium is determined by some common underlying alteration in the physical state which is influenced by infection and endocrine irregularities. Patients with periarthritis of the shoulder tend to recover in from one to six months if they are adequately treated in the early stages of the disease. General treatment is important in these cases.

PHILIP LEWIN, M.D.

Alpers, B. J., Grant, F. C., and Yaskin, J. C.
Chondroma of the Intervertebral Disks. *Ann Surg.* 1933, xcvi, 10.

The authors discuss the occurrence of intervertebral disk extensions into the spinal canal with chondroma formation and cord compression. Trauma seems to be of importance in the development of this condition although a definite history of trauma is not always obtainable. Disk extensions are most common in the cervical and lumbar regions of the spine, the regions most subject to injury.

The tumors vary in size from that of a pea to that of a bean. They are extradural, hard or soft, and often multiple. They are made up of fibrocartilage, and seem to be outgrowths of the annulus fibrosus of the intervertebral disk.

The clinical picture varies with the location of the tumor, but is usually that of compression of the

anterior aspect of the spinal cord with motor disturbances and cutaneous sensory loss. Subarachnoid block is not so frequent as in cases of true cord tumor, and the use of the roentgen ray is seldom of definite help. When low down, the nodules may produce unilateral sciatic pain.

The authors report a case in which an intervertebral disk chondroma followed a severe back injury, caused pain and weakness in one leg, and was removed surgically with cure of the symptoms.

CHESTER C. GUY, M.D.

Scaglietti, O. Anatomical Studies of Sacralization of the Fifth Lumbar Vertebra (Ricerche anatomiche sulla sacralizzazione della V^a lombare). *Chir. d. organi e movimento*, 1932, xvii, 333.

At the suggestion of Putti, the author made a study of the shape, diameter, and regularity of the walls of the anomalous foramina in fifty-eight cases of sacralization of the fifth lumbar vertebra to discover the anatomical cause of the pain associated with the condition. In thirty-nine of the cases the sacralization was bilateral, in three it occurred on the right side only, and in sixteen it occurred on the left side only. The findings of the anatomical study are summarized as follows:

1 Except where there was total and perfect fusion, supernumerary foramina had no grooves going toward the exterior. The foramina were directed anteriorly and in a frontal plane.

2 The margins of the vertebral bodies between the fifth lumbar and the first sacral showed accentuation of physiological eversion, especially by marginal osteophytic formations secondary to arthritic processes.

3 At the point of fusion of the apophyses there was a more or less apparent elevated border.

4 The foramina frequently seemed limited in the transverse diameter to a minimum of 6 mm. With these slight variations in the shape of the anomalous foramina there was frequently an associated eversion of the margins of the vertebral bodies and of the new joints which caused a narrowing of the lumen of the foramina—a secondary, not a primary, narrowing.

5 Congenitally narrowed foramina were very rare.

6 The articulations between the fifth lumbar vertebra and the sacrum in cases of bony union of the large transverse process with the sacrum were often not fused.

7 In some cases of fusion of the fifth lumbar vertebra to the first sacral vertebra there was a more or less accentuated bony border corresponding to the intervertebral disks, the foramina therefore being kidney shaped.

8 Frequently, especially in cases of unilateral sacralization, the small articulations between the fifth lumbar vertebra and the first sacral vertebra on the side opposite the sacralization were involved by arthritic processes.

9 The more accentuated development of a large transverse process was the cause of an inclination of

the body of the fifth lumbar vertebra with a corresponding decrease in the space between the transverse process and sacral wing of the opposite side.

10. In hyperbasal sacra there was a slight bilateral contact with the transverse process. Hyperbasality of the sacrum may be regarded as a phase in the greater development of the sacral wing identical with that seen in the transverse process in the first stages of sacralization.

11. In a case of sacralization studied in the cadaver the histological sections made frontally to preserve the anatomical relationships showed a foramen both wide and free. In crossing the anomalous foramen, the fifth lumbar nerve, abundantly surrounded by adipose tissue, was nearer the intervertebral disk than to the new joint.

12. The cartilage of the new joint showed microscopically definite arthritic changes.

The author concludes that among the primary factors causing pain in sacralization are the lack of external direction of the foramina and the rare occurrence of congenitally narrowed foramina. The secondary causes are more numerous and include arthritic changes in the intervertebral articulation between the fifth lumbar and the first sacral vertebrae.

The author therefore believes that only in very rare cases can pain be attributed to a congenital narrowing of the foramina without secondary changes, and that more frequently it is caused by secondary changes which complicate the anatomical anomalies and produce irregularity of the walls and narrowing of the lumina of the supernumerary foramina.

EDOUARD T LEROY, M.D.

Duclo, F. P.: The Problem of Non-Traumatic Fragmentations of the Patella. *Patella Bipartita* (El problema de las fragmentaciones no traumáticas de la rótula. *Patella bipartita*). *Rev. de chir. de Barcelona*, 1935, 2, 57.

First observed in 1883 at autopsy as a bilateral lesion in a boy of twenty-one years, partition of the patella into a small supero-external fragment and a larger main body of bone has been observed in numerous instances, especially since the advent of roentgenography until more than eighty cases have been recorded in the literature. The lesion is usually bilateral, although in occasional well-worked up cases it is found on only one side.

The anomaly is usually mistaken for fracture. In 1915 Adams and Leonard found uncomplicated fragmentation of this type in 3 per cent of sixty-three cases in which a diagnosis of fracture of the distal patella had been made. The division may result in the formation of three or even more fragments of the bone. Three principal forms have been described:

1. Which the patella is divided into a

Wierthy, M.: Chondro and a small peripheral fragment out of 350 Cases. For horizontal line the smaller

Of the 350 patients w the main one. This type is the author 63.57 per cent of cases.

2. That in which the line of division is vertical, the smaller fragment being lateral and the larger one constituting about two-thirds of the patella, being medial. This type is found in 5 per cent of the cases.

3. That in which an oblique line of division separates a small single fragment or multiple fragments in the upper and outer portion of the patella. This is the classical type of the anomaly which is found in 75 per cent of the cases.

Some surgeons have described also a type in which there is a bilateral duplication of the patella. In this type the lateral view shows what appears to be a nearly normal patella situated beneath a larger and thinner patella—two patellae, one superimposed upon the other.

These anomalies are often accompanied by other skeletal variations from the normal.

The fact that the lesion is usually bilateral leads to the assumption that it is due to a disturbance during the development of the patella. Further ossification occurs usually at the age of five years. In the majority of cases there is a single nucleus of ossification, but in 15 per cent there are two or more nuclei. The action of the quadriceps has been suggested as a cause of the division. In experiments carried out on rats by Mosher in 1924, in which one extremity was kept strongly flexed, it was noted that the corresponding patella was divided into a large central and a small peripheral fragment separated by a transverse line. This observation suggested Osgood-Schlatter disease and Larsen-Johnson disease. It is entirely possible that the action of multiple nuclei of ossification in a patella may be disturbed by the action of the quadriceps.

Clinically there is often a history of trauma, such as a fall, a blow or excessive exercise, but sometimes trauma is denied. As a rule the symptoms develop slowly.

In fractures, the fissure has a serrated aspect, whereas in patella bipartita it has smooth borders. The relative size of the fragments is also of importance in the differential diagnosis, as nearly equal size suggests a fracture. In fracture, the fragments are often separated, whereas in patella bipartita they are coapted. The anomaly usually occurs in males between ten and fifteen years of age.

The treatment should be conservative, consisting in the use of restraining bandage, hydrotherapy, rest from exercise, a diet rich in vitamins, and the administration of vitamin D and calcium. Surgery should be considered only in cases in which a displaced fragment has caused arthritis by irritation.

JAMES T. CASE, M.D.

Ryrie, B. J.: Adamantinoma of the Tibia: Its Etiology and Pathogenesis. *Br. M. J.* 93, 2, 1900.

The origin of extra-alveolar adamantinoma at the base of the skull and in relation to the pituitary gland is satisfactorily explained on embryological grounds. The only other extra-alveolar adaman-

tinoma of which the author is aware is the very infrequently described adamantinoma of the tibia. Cases of adamantinoma of the tibia are so similar as to indicate that the condition is a definite clinical and pathological entity. In all, there is a history of trauma which was slight so far as surface injury was concerned, the tumor developed after a latent period, the tumor occurs in the bone and periosteum, not in the soft parts, the histological structure of the tumor is the same, being that of certain types of adamantinoma, basal-celled carcinoma, or rodent ulcer, and the tumor tends to recur locally.

Fischer in 1913 attributed such tumors to the growth of an epithelial germ rest dating from the period of tooth-germ formation. He rejected trauma as an etiological factor. In 1931 Baker and Hawksley also postulated a fetal epithelial rest, but concluded that the rest is stimulated to grow by injury. The author believes that trauma to the tibia may break up the deeper layers of epithelium without disturbing the surface, and that the anatomy of the region of the tibia favors deep laceration with hematoma formation and subsequent ossification. In soft tissues, absorption or repair takes place more readily, but the ossified hematoma on the tibia, thwarted in efforts toward repair, ultimately passes into tumor growth. This theory explains the long latent period. The author rejects the fetal implant theory. The malignant tumor originating in the manner described does not involve the soft parts as the basal-cell type of carcinoma does not readily invade new types of tissue.

This explanation of constantly frustrated repair and the final transition of hyperplasia into neoplasia brings the neoplasm into relationship to other types of pathological growth in inflammation and repair.

ARTHUR H. WEILAND, M D

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Wilson, J. C. Operative Fixation of Tuberculous Hips in Children. End-Result Study of Thirty-Three Patients from the Orthopedic Department of the Children's Hospital. *J Bone & Joint Surg*, 1935, xv, 22.

The recent trend in the treatment of tuberculosis of the hip joint has been toward surgical fusion, as it is generally agreed that healing of a tuberculous joint cannot be obtained with preservation of useful motion. However, opinions differ as to the advisability of fusion operations in the cases of children.

The operation of iliofemoroplasty was developed after intra-articular methods and the use of autogenous tibial and fibular transplants had proved unsatisfactory. A curved incision is made below the crest of the ilium and the gluteal muscles and periosteum are stripped from the ilium and retracted posteriorly. The muscular attachments to the great trochanter are freed, and the epiphysis of the trochanter is displaced if it is not yet ossified. The shaft of the femur is exposed for about 6 cm. and

the joint capsule widely opened above. The great trochanter is then split in the long axis of the femur for 5 cm. and a fan-shaped portion of the outer cortex of the ilium reflected downward with its base at the acetabular margin. This flap is bent and fitted into the cleft in the trochanter, the muscle flap is replaced, and the patient placed in a previously prepared bivalved, long double spica cast.

This operation is suitable for a child of any age who is a good surgical risk. Abscesses with or without sinuses are not contra-indications, and destruction of the femoral head simplifies the operation. Fixation is advisable early in the disease, but the diagnosis should always be confirmed by biopsy or aspiration of the joint before it is done.

The thirty-three children whose cases are reviewed by the author were from three to fourteen years of age. All of them had had some form of conservative treatment. In six cases the operation was performed in the presence of draining sinuses, and in ten, closed abscesses were encountered outside of the hip joint. In twenty-three cases, drainage continued for from six weeks to over five years after the operation. In two cases the operation was repeated once, and in two it was repeated twice.

Immobilization was carried out postoperatively for from five months to three years. In every case it was continued until ankylosis was clinically firm. Even when weight-bearing was allowed, the hip was protected by a cast until fusion could be demonstrated by roentgenograms. This is advisable although clinical fusion frequently occurs before it can be seen in the roentgenogram.

The optimum position for ankylosis of the child's hip is thought to be in from 15 to 20 degrees of flexion and not over 10 degrees of abduction, with no rotation. This may be modified after examination when the patient reaches adult life. The longitudinal growth of the femur is conserved rather than retarded by fusion, and scoliosis does not develop.

In the cases reviewed there were no immediate postoperative deaths, but two of the patients died subsequently from tuberculosis.

The fusion operation described prevents motion, thus allowing consolidation of the diseased areas which is followed by closure of the sinuses. Secondary infection is of no practical importance. The hips of twenty-seven of the thirty-three patients are solidly fused according to the findings of both clinical and roentgen-ray examinations. The great majority of the patients have been followed for from two to seven years since the operation.

CHESTER C. GUY, M D

FRACTURES AND DISLOCATIONS

Volkman, J. Fractures of the Cuneiform Bone (Ueber Triquetrumfrakturen). *Beitr z klin Chir*, 1932, civ, 275.

In 7 per cent of cases of fracture of the distal ends of the radius and ulna there is involvement of the

the body of the fifth lumbar vertebra with a corresponding decrease in the space between the transverse process and sacral wing of the opposite side.

10. In hyperbæmal sacra there was a slight bilateral contact with the transverse process. Hyperbæmality of the sacrum may be regarded as a phase in the greater development of the sacral wing identical with that seen in the transverse process in the first stages of sacralization.

11. In a case of sacralization studied in the cadaver the histological sections made frontally to preserve the anatomical relationships showed a foramen both wide and free. In crossing the anomalous foramen, the fifth lumbar nerve, abundantly surrounded by adipose tissue, was nearer the intervertebral disk than to the new joint.

12. The cartilage of the new joint showed microscopically definite arthritic changes.

The author concludes that among the primary factors causing pain in sacralization are the lack of external direction of the foramina and the rare occurrence of congenitally narrowed foramina. The secondary causes are more numerous and include arthritic changes in the intervertebral articulation between the fifth lumbar and the first sacral vertebra.

The author therefore believes that only in very rare cases can pain be attributed to a congenital narrowing of the foramina without secondary changes, and that more frequently it is caused by secondary changes which complicate the anatomical anomalies and produce irregularity of the walls and narrowing of the lumina of the supernumerary foramina.

ROBERT T. LAMORE, M.D.

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The anomaly is usually mistaken for fracture. In 1925 Adams and Leonard found uncomplicated fragmentation of this type in 5 per cent of sixty-three cases in which a diagnosis of fracture of the patella had been made. The division may result in two, three or even more fragments of the patella. If the information of three or even more fragments of the symphyseal joint. Three principal forms have been

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These anomalies are often accompanied by other skeletal variations from the normal.

The fact that the lesion is usually bilateral leads to the assumption that it is due to a disturbance during the development of the patella. Patellar ossification occurs usually at the age of five years. In the majority of cases there is a single section of ossification but in 25 per cent there are two or more nuclei. The action of the quadriceps has been suggested as a cause of the division. In experiments carried out on rats by Mueller in 1924, in which one extremity was kept strongly flexed, it was noted that the corresponding patella was divided into a large central and a small peripheral fragment separated by a transverse line. This observation suggested Osgood-Schlatter disease and Larsen-Johansen disease. It is entirely possible that the union of multiple nuclei of ossification in a patella may be disturbed by the action of the quadriceps.

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The treatment should be conservative, consisting in the use of a restraining bandage, hydrotherapy, rest from exercise, a diet rich in vitamins, and the administration of vitamin D and calcium. Surgery should be considered only in cases in which a dislocated fragment has caused arthritis by irritation.

JACOB T. CASE, M.D.

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The origin of extra-alveolar adamantinomas at the base of the shaft and in relation to the pharyngeal gland is satisfactorily explained on embryological grounds. The only other extra-alveolar adamant-

sixty-six were through the trochanters or extracapsular. This suggests that the latter are the more common type in the aged, which is contrary to what is customarily taught.

The author believes that trochanteric fractures are not due to direct violence to this region, but are the result of a compression action produced when the body weight is thrown on the femur suddenly. In support of this theory, he presents a mathematical diagram. Fractures of the femoral neck he attributes to axial torsion.

He believes that the use of the terms "intracapsular" and "extracapsular" for these injuries is misleading and suggests dividing all fractures of the upper end of the femur into the following five groups: (1) subcapital fractures of the neck, (2) transcervical fractures, (3) trochanteric fractures, (4) subtrochanteric fractures, and (5) "avulsion fractures" of the trochanter major.

CHESTER C. GUY, M.D.

Wolcott, W. E. Circulation of the Head and Neck of the Femur. Its Relation to Non-Union in Fractures of the Femoral Neck. *J. Am. M. Ass.*, 1933, c, 27.

This report is based on seventy-nine cases of fracture of the hip and observations made at autopsy. Four cases of non-union following intracapsular fracture were treated by the Whitman reconstruction method. The author reports the roentgenographic and microscopic findings in the four removed femoral heads. In three of them there was definite increased density, but in none of them was there complete necrosis.

The author concludes that the ligamentum teres carries a definite blood supply to the head of the femur regardless of the patient's age. As he believes this is of importance in the healing of fractures, he states that operations should be so executed that the ligament will not be damaged.

CHESTER C. GUY, M.D.

bones of the wrist, including the cuneiform bone. Of eighty fractures of the cuneiform bone reviewed—seventy-four collected from the literature and six treated by the author—forty-five were associated with other injuries. Thirty-five were isolated fractures of the cuneiform bone. In the combined fractures avulsions on the side of the cuneiform bone next to the semilunar bone often combined with perilunar dorsal dislocation of the hand, predominate. A particularly characteristic complication is a longitudinal fissure of the radius, which was found in one-tenth of the cases reviewed. Stellate fractures and total shattering are caused by the action of direct force such as crushing. Fractures produced indirectly are usually caused by a fall with the wrist in dorsal flexion or less frequently in volar flexion and the hand in marked pronation or ulnar abduction. They are evidently produced also when the forearm is thrown out for support at a right angle with slight rotation of the radial side of the palm. The latter position is usually assumed in backward falls on the hand. The resulting lesions range from a simple dorsal avulsion or avulsion on the side toward the semilunar bone, above the transverse, oblique, or less frequently longitudinal fracture line to a combination with a longitudinal fissure or fracture of the radius.

The cuneiform bone does not become fractured very frequently because, with the ulnar half of the semilunar bone, it articulates with the articular disk by a relatively small joint surface, in contrast to the scaphoid bone and the radial portion of the semilunar bone. Important muscle insertions are absent, but the dorsal ligamentous apparatus is centered over the cuneiform bone. Very firm and short transverse ligaments which bind the cuneiform bone to the other carpal bones in the same row are important. Because of these, longitudinal fractures of the cuneiform bone may occur as the ligaments hold more firmly than the bones. The movable, unsupported portion of the cuneiform bone can be avulsed more easily than the immovable portion. On the flexor side the ligamentum radio carpeum volare gives very firm support. Countertraction exerted by the ligamentum collateral carpi ulnare inserted on the cuneiform bone favors avulsion of that bone. By traction and countertraction with simultaneous distal fixation of the cuneiform bone fracture is produced.

Of the fractures reviewed, all of the isolated fractures of the cuneiform bone and 50 per cent of the combined fractures occurred in males. The fractures were most common in middle-aged persons and were infrequent in children and old persons.

The clinical syndrome is not very characteristic. However a fracture is suggested by localized pain on pressure and extravasation of blood just distal to the lower end of the ulna. If the forearm is laid on a table with the wrist and hand extending beyond the edge of the table, the hand is placed in the position it was in when the injury occurred, and an attempt is made to bring it into the opposite position by

extension, flexion, supination, or radial abduction, the patient will usually be able to demonstrate the site of the injury. However the chief aid in the diagnosis is examination with the roentgen ray. Care must be taken not to mistake sesamoid bones for pieces torn from the cuneiform bone.

In some cases the end-result of fractures of the cuneiform bone is a pseudarthrosis. In general, however the prognosis is favorable. Prolonged limitation of movement is unusual.

The author recommends the application for a few days of a splint with a slightly compressing dressing to relieve the pain, effusion of blood, and swelling. The moisture should be applied to the dressing from above without removing the dressing. After the removal of this splint a plaster-of-Paris splint should be applied for several days. Rest and antiseptic are rarely indicated. In the after-treatment, hot air, massage, and passive and active movements should be made. ERICH HEDBERG (2)

Del Rocco, L. M.: Two Cases of "Isolated" Fracture of the Atlas (Sopra due casi di frattura "isolata" dell'atlante). *Chir. e ortop. di movimento*, 1934, vol. 3, 33.

Fractures of the atlas are rare and as they present no characteristic symptoms are almost impossible to diagnose without a roentgen examination. The author presents the clinical histories and roentgenograms of two cases of fracture of the atlas resulting from a fall on the head.

Fractures of the atlas may be divided into two groups: (1) those with an accompanying lesion of the skull and of the second cervical vertebra, and (2) those without an accompanying lesion. Those of the first group are the more common. Those of the second group, to which the author's two cases belong, are much less frequent.

The site of the fracture is usually the anterior or posterior arches. Involvement of the articular portion or of the lateral masses is quite rare. As a rule there are multiple fractures through one or more of the arches or through their bases. Fracture of the posterior arch occurs in 60 per cent of the cases, fracture of both arches in 25 per cent, and fracture of the anterior arch alone in 15 per cent.

The most common complications of fracture of the atlas are rupture of the vertebral artery and injury of the occipital nerve. The most common cause of such fractures is indirect trauma.

In uncomplicated fractures the prognosis is favorable.

The best treatment is immobilization for at least two months, with the addition of traction if the fracture is complicated. Operative intervention is rarely necessary. ERIC T. LLOYD, M.D.

Jacobson, J. N.: Fractures of the Upper End of the Femur in the Aged. *Br. J. Radiol.* 33: 1, 59.

Of eighty fractures of the upper end of the femur in persons past seventy years of age, only fourteen were of the neck or intracapsular type, whereas

sixty-six were through the trochanters or extracapsular. This suggests that the latter are the more common type in the aged, which is contrary to what is customarily taught.

The author believes that trochanteric fractures are not due to direct violence to this region, but are the result of a compression action produced when the body weight is thrown on the femur suddenly. In support of this theory he presents a mathematical diagram. Fractures of the femoral neck he attributes to axial torsion.

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CHESTER C. GUY, M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Pemberton J del., and McCaughan J M:
Traumatic Lesions of Arteries; Indications for
Therapeutic Ligation of Veins. *Ann. Surg.*
1932, xvi, 1-23.

In cases of inadequate collateral circulation, ligation of the main venous channel at the time of ligation of its companion artery is a valuable procedure. In cases in which the collateral circulation is adequate it is definitely contra-indicated because of the prolonged circulatory imbalance likely to be induced. In cases in which the collateral circulation is inefficient, ligation of the concomitant vein provides a more homogeneous distribution of the available blood and increases the chances of survival of the limb beyond the so-called critical time.

The efficiency of the collateral circulation should be determined as accurately as possible before operation and confirmed at operation. When the Henle Coenen sign is positive, ligation of the accompanying vein is contra-indicated, but when this sign is negative, ligation of the main venous channel is advisable.

De Takats, G., and Quillen, L.: Ligation of the Sphenous Vein. A Report on 200 Ambulatory Operations. *Arch. Surg.* 1932, xvi, 77.

Ligation of the sphenous vein has been performed by the authors on 200 ambulatory patients. The operation is indicated in (1) valvular incompetence of the long sphenous vein above the lower third of the thigh, (2) valvular incompetence of the communicating valves which resists injection treatment, and (3) ascending thrombophlebitis of the sphenous vein, in which it is done to produce an effective barrier against embolism. An aseptic ligation close to the sphenofemoral junction seems safer than a massive thrombus produced by high injection as the latter may be loose and friable if a latent infection is activated. An equally important reason for advocating ligation of the sphenous vein at high levels is the frequent canalization of thrombi when the back-pressure of the blood is permitted to persist. While in a previous series of cases the incidence of recurrence following the use of injection treatment alone was a little over 10 per cent, a recurrence developed in fewer than 5 per cent of cases when the treatment was based on proper indications and a correct technique was employed.

The operation is contra-indicated when (1) the vein is not involved above the knee, (2) there are multiple incompetent valves in the communicating branches which cannot all be ligated, and (3) there is evidence of insufficiency of the deep venous return due to an old phlebitis or a deep valvular insufficiency.

The technique is described in detail with illustrations. The operation is done in a sterile operating room and with all precautions for asepsis. The vein is tied doubly and cut between two ligatures as high up as possible. No clamps are used. In the cases of ambulatory patients dressings are glued to the skin with a solution of gum mastic to prevent secondary contamination. The patients are asked to stay at home for two days and to return for examination after forty-eight hours. They should not stay in bed during the day for any length of time.

In 100 of the cases reviewed the postoperative disability was estimated as follows: 161 patients, none; 22 patients, one day; 8 patients, two days; 3 patients, three days; 3 patients, four days; 1 patient, eight days; and 2 patients, nine days.

The complications were a pyrexia reaction due to intravenous injection, a hematoma, postoperative hemorrhage, a slight wound infection, and a fatal infection due to the hemolytic streptococcus which occurred in 1 case each. The authors believe that all of these complications are usually preventable. In none of the cases did embolism develop.

Of the 200 patients, 32.5 per cent showed a massive thrombosis distal to the ligature, and in 50 per cent the obliteration was complete so that no further injections were necessary. In the others, injection treatment was carried out after the incision had healed. The number of injections following preliminary ligation was small. In 9 per cent of the cases there was a palpable clot proximal to the ligature. The shorter the proximal stump the less was the possibility for the formation of a clot.

On the basis of these 200 ambulatory vein ligations combined with injection treatment the authors conclude that this procedure has a definite place in the treatment of varicose veins.

Wright, A. D.: Phlebitis. *Lancet* 1932, ccccvi, 65.

Phlebitis is almost entirely a disease of the lower extremities and may be brought about by a number of causes. A superficial phlebitis may be one of the earliest findings in malignant disease of the stomach, thrombo-angitis obliterans, and thrombophlebitis migrans.

Bedridden patients should be watched for causes of venous obstruction such as air cushions, knee bolsters, and prolonged rest in one position. Patients with varicose veins should have the extremities bandaged before they are subjected to major surgery.

The treatment of phlebitis of the posterior tibial vein consists of the application of a firm elastoplast bandage to the knee to anchor the clot and prevent extension. If the femoral vein is thrombosed the

patient must be kept in the horizontal position as elevation of the limb may predispose to embolism. A rubber bed-pan should be used, and under no condition should a sitting posture be allowed. Straining at stool must be avoided. After two or three weeks, when the swelling begins to subside, the application of a bandage from the foot to the groin will hasten recovery and reduce the size and weight of the limb. Later an elastic bandage or stocking should be worn indefinitely.

Superficial phlebitis is a different problem. In the author's cases a rubber pad is placed at the upper end of the clot and a tight elastoplast bandage applied below the pad. This expels the inflammatory exudates from within and around the vein and compresses the clot and hastens its organization. The patient is kept ambulatory, even if the temperature is elevated. This treatment should be continued for six weeks. At the end of that time the veins will be found obliterated. It is of great value when an excessive reaction follows the injection of varicose veins.

A past femoral thrombosis is not a contra-indication to the injection of obvious varicose veins. Varicose veins which are the site of repeated phlebotic attacks should be dealt with by injection.

GEORGE A. COLLETT, M.D.

De Takáts, G. The Management of Acute Thrombophlebitic Oedema. *J Am M Ass*, 1933, 9, 34.

De Takáts states that the management of thrombophlebitic oedema due to thrombosis of the deep veins usually consists of immobilization of the patient for from four to six weeks with some elevation of the affected limb. Later cyanosis usually develops as the first symptom and is followed by a hard brawny swelling of the limb which is permanent. The appearance of collateral veins on the extremity depends upon the extent of thrombosis into the tributaries of the femoral vein. Chronic oedemas are a potential source of further trouble. Superimposed ringworm infection, thrombophlebitic ulcers, and flare-ups of lymphangitis and elephantiasis may result. In extreme cases nothing short of amputation of the leg is of value. The oedematous fluid that follows extensive venous obstruction is hæmorrhagic and rich in protein.

The author describes a treatment which is a systematic effort to get rid of the oedema in the acutely affected limb as quickly as possible and to alleviate the sequelæ. The leg elevated in a wooden frame surmounted by an electrical cradle, the fluid intake restricted to 20 oz (600 c.c.), and a diet low in calories and fats but with a liberal supply of carbohydrates is given. Salt is restricted, and once or twice a week salt is prohibited entirely for a day. The most active dehydration can be accomplished with mercury diuretics, notably salyrgan. This is given intravenously in an initial dose of 1 c.c. and is repeated every third or fourth day in 2-c.c. doses until the oedema disappears. At the same time, ammonium chloride may be given in doses

of from 4 to 6 gm. daily. The treatment includes also exercise and massage. Massage of gradually increasing intensity is given for five minutes daily for a week. It is never given higher than the knee, and the evening pulse and temperature are watched for a possible reaction. Later, the patient is allowed to hang his foot down over the side of the bed, and dorsal and plantar flexion of the foot for five minutes three times a day is prescribed. Finally the patient is allowed to be out of bed for gradually increasing periods of time. The arbitrary period of immobilization after deep thrombosis is six weeks.

This management is of value only at the time the oedema appears. It has little effect in the chronic stage of thrombosis.

J. THORNWELL WITHERSPOON, M.D.

Gosset, A., Bertrand, I., and Patel, J. The Pathology of Arterial Embolism of the Extremities. Experimental Studies (Sur la physiopathologie des embolies artérielles des membres. Recherches expérimentales). *Ann d'anat path*, 1932, 15, 841.

The authors state that obliteration of an artery by a clot of blood may be brought about by thrombosis or embolism. Thrombosis implies the existence of a traumatic or primary pathological lesion in the wall of the artery with a disturbance of the equilibrium between the liquid state of the blood and the integrity of the endothelium. This may give rise to diffuse or localized intravascular clotting of the blood.

Embolism is the result of the lodgment, usually at the bifurcation of an artery, of a blood clot which was formed elsewhere. The clot increases in size, alters the arterial wall by contact with it, and interferes with the circulation of the extremity.

In a series of forty dogs the authors produced arterial embolism of one extremity by injecting autogenous blood clots through the common hypogastric artery into the peripheral circulation. Three animals failed to show signs of embolism because of fragmentation of the clots at the time of the injection.

Following the lodgment of the experimental embolus, the dog experienced great pain and the paw became pale, cold, immobile, and anæsthetic. Pulses were absent below the obliterated portion of the artery. The coldness and oedema disappeared after three or four days. Functional impotence remained complete. Claudication was marked. Gangrene of the paws was exceptional. Of the forty dogs, which were observed for eight or nine days after the injection of the emboli, only two showed gangrene of the paw. Very extensive secondary thrombosis was found in these animals.

From their study of the histological changes in the wall of the artery at various intervals after the lodgment of the embolus the authors conclude that involvement of the nervous tissue in the adventitia of the artery is of great significance. They agree with Lenche that an obliterated artery is essentially a diseased plexus of nerves. The repeated and ab-

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Pemberton, J. deJ., and McCaughan, J. M.: *Traumatic Lesions of Arteries: Indications for Therapeutic Ligation of Veins. Ann. Surg.* 1932 XLVI, 103

In cases of inadequate collateral circulation, ligation of the main venous channel at the time of ligation of its companion artery is a valuable procedure. In cases in which the collateral circulation is adequate it is definitely contra-indicated because of the prolonged circulatory imbalance likely to be induced. In cases in which the collateral circulation is insufficient, ligation of the concomitant vein provides a more homogeneous distribution of the available blood and increases the chances of survival of the limb beyond the so-called critical time.

The efficiency of the collateral circulation should be determined as accurately as possible before operation and confirmed at operation. When the Hensle-Coenen sign is positive, ligation of the accompanying vein is contra-indicated, but when this sign is negative, ligation of the main venous channel is advisable.

De Takata, G., and Quillin, L.: *Ligation of the Saphenous Vein. A Report on 200 Ambulatory Operations. Arch. Surg.* 1932 XLVI, 72.

Ligation of the saphenous vein has been performed by the authors on 200 ambulatory patients. The operation is indicated in (1) valvular incompetence of the long saphenous vein above the lower third of the thigh, (2) valvular incompetence of the communicating valves which resists injection treatment, and (3) ascending thrombophlebitis of the saphenous vein, in which it is done to produce an effective barrier against embolism. An aseptic ligation close to the saphenofemoral junction seems safer than a massive thrombus produced by high injection as the latter may be loose and friable if a latent infection is activated. An equally important reason for advocating ligation of the saphenous vein at high levels is the frequent canalization of thrombi when the back pressure of the blood is permitted to persist. While in a previous series of cases the incidence of recurrence following the use of injection treatment alone was a little over 10 per cent, a recurrence developed in fewer than 1 per cent of cases when the treatment was based on proper indications and a correct technique was employed.

The operation is contra-indicated when (1) the vein is not involved above the knee, (2) there are multiple incompetent valves in the communicating branches which cannot all be ligated, and (3) there is evidence of insufficiency of the deep venous return due to an old phlebitis or a deep valvular insufficiency.

The technique is described in detail with illustrations. The operation is done in a sterile operating room and with all precautions for asepsis. The vein is tied doubly and cut between two ligatures as high up as possible. No clamps are used. In the cases of ambulatory patients dressings are glued to the skin with a solution of gum mastic to prevent secondary contamination. The patients are asked to stay at home for two days and to return for examination after forty-eight hours. They should not stay in bed during the day for any length of time.

In 100 of the cases reviewed the postoperative disability was estimated as follows: 161 patients, none; 23 patients, one day; 8 patients, two days; 5 patients, three days; 3 patients, four days; 1 patient, eight days; and 1 patient, nine days.

The complications were a pyrexia reaction due to intravenous injection, a hematoma, postoperative hemorrhage, a slight wound infection, and a fatal infection due to the hemolytic streptococcus which occurred in 1 case each. The authors believe that all of these complications are usually preventable. In none of the cases did embolism develop.

Of the 200 patients, 32.5 per cent showed a massive thrombosis distal to the ligation, and in 30 per cent the obliteration was complete so that no further injections were necessary. In the others, injection treatment was carried out after the ligation had healed. The number of injections following preliminary ligation was small. In 9 per cent of the cases there was a palpable clot proximal to the ligation. The shorter the proximal stump the less was the possibility for the formation of a clot.

On the basis of these 200 ambulatory vein ligations combined with injection treatment the authors conclude that this procedure has a definite place in the treatment of varicose veins.

Wright, A. D.: *Phlebitis. Lancet* 1932, CLXXIV, 85.

Phlebitis is almost entirely a disease of the lower extremities and may be brought about by a number of causes. A superficial phlebitis may be one of the earliest findings in malignant disease of the stomach, thrombo-embolism obliterans, and thrombophlebitis migrans.

Bedridden patients should be watched for causes of venous obstruction such as air cushions, knee bolsters, and prolonged rest in one position. Patients with varicose veins should have the extremities bandaged before they are subjected to major surgery.

The treatment of phlebitis of the posterior tibial vein consists of the application of a firm elastoplast bandage to the knee to anchor the clot and prevent extension. If the femoral vein is thrombosed the

changes in its activity that it damages or destroys a larger number of platelets than normal, but that, on the other hand, a considerable increase in the formation of platelets is brought about by the cellular products. Only in this way can the increased platelet count following splenectomy be explained. Experimental interference with the function of the spleen by means of an accumulation of pigment in the reticulo endothelium produces the same results as extirpation of the spleen. After splenectomy, the effects of injected muscle extract are exactly the reverse of the effects when the spleen is present. In histological sections after the injection of a non-fatal dose of muscle extract, a marked filling of the venous sinuses of the spleen as compared with the control may be demonstrated. In the presence of the spleen the diminution of platelets from cellular products may be prevented by the use of sympatol. This action can be explained only by a contraction of the spleen, that is, elimination of its platelet-destroying action. Injections of autogenous blood act in the same way as sympatol.

These findings permit the extremely important therapeutic conclusion that the enlargement of the spleen resulting from the effect of operation on the circulation and the consequent increase in splenic function, which is manifested in increased platelet destruction and is of great importance in the origin of thrombosis, may be prevented by early stimulation of the circulation and the injection of the patient's own blood. In accordance with the results of these investigations the author has given prophylactic treatment to 250 surgically treated patients in the course of a year. He either injected from 40 to 50 c cm. of the patient's own blood immediately after the operation or, more frequently, administered 20 drops of sympatol 3 times daily. In addition he prescribed energetic exercises with Payr's foot roll. In these cases—in all of which a laparotomy was done—fatal pulmonary embolism occurred only once and thrombosis was recognized twice from tenderness of the soles and slight pain in the calf. The thrombosis was treated immediately by the administration of sympatol with successful results.

MAX BUDDE (Z)

Moritsch, P., and Wittmann, G. Ten Years of Blood Transfusion in the First Surgical Clinic (Zehn Jahre Bluttransfusion an der I chirurgischen Klinik.) *Deutsche Ztschr. f. Chir.*, 1932, cxxxvi, 669.

The authors report experiences with blood transfusion over a period of ten years. The Percy method of transfusion was used. Other methods, which do not require exposure of the veins, are unsuccessful in the cases of patients with poorly developed veins. The preparation of the Percy tube presents no difficulty in the clinic. The material reviewed included 2 groups of patients: (1) bed patients in the clinic, and (2) ambulatory patients, referred for transfusion from other wards and services. The latter group cannot be reported upon statistically because

at times no record was kept. Four hundred and nineteen transfusions were given the first group, and the total number is estimated at about 2,000.

Some practical observations are made regarding the choice of donors: examination for syphilis, gonorrhoea, lung and heart disease, preliminary grouping with test sera, and matching of the donor's serum with test corpuscles. The biological test is also made in every transfusion. If possible, only donors of the same group are employed. Women are used as donors only in the interval between the menses, as clotting occurred in the Percy tube twice when the donor was taken during the menstrual period. Successful transfusion requires a careful technique. Therefore, detailed descriptions are given of the preparation of the veins (in 2 cases the ulnar artery was accidentally ligated). Clotting in the tube occurred 6 times. The causes were poor preparation of the Percy tube, thrombosis of the recipient's veins, and poor veins in the donor in 2 cases each.

Shock occurred once as a result of inaccurate blood-grouping, a donor belonging to Group B being used for a recipient belonging to Group O. In another case, that of a patient with aplastic anaemia who belonged to Group A, 2 transfusions from a donor belonging to Group O resulted in severe haemoglobinuria. A third transfusion, from a donor of the same group as the recipient, also led, after several hours, to considerable haemoglobinuria. Incompatibility of certain subgroups or injury of the kidney parenchyma was assumed. Besides these, no unfavorable reactions were observed.

The results of the 479 transfusions are reported in detail.

In 18 cases of acute blood loss due to injury the results were good. In 6 they were poor because of the large size of the bleeding vessels. There were 42 cases of haemorrhage from gastric ulcer and carcinoma. In 30 the transfusion had a very good effect, but, in 12 it was without benefit. In 8 the patient was operated upon and in 4 he was moribund. In 32 cases of postoperative haemorrhage 34 blood transfusions were given. Of the 15 cases in which the haemorrhage followed gastric resection, good results were obtained in all. Of the 17 other cases, 10 were treated by operation and transfusion with good results, and 7 by transfusion alone with good results in 5. In 17 cases there was a haemorrhagic diathesis with acute haemorrhage. In all but 2 a favorable result was obtained, but in some of them only after several transfusions. In cholæmic haemorrhages it is necessary to differentiate between cholangitis and cholæmic bleeding. In 8 cases of the first type transfusion was without effect. Of 19 cases of postoperative cholæmic haemorrhage the bleeding was controlled by repeated transfusion in only 3.

There were 67 cases of secondary anaemia and tumor cachexia. As preparation for operation, blood transfusion seemed to exert a favorable effect upon the general condition. In 15 cases it seemed to have

normal irritation of these nerve fibers brings about the vasomotor disturbances, usually of the vasoconstrictor type, which cause interference with the collateral circulation. The vasomotor phenomena disappear immediately after removal of the obliterated segment of the artery.

Secondary thrombosis of the artery frequently takes place after embolectomy. Consequently section of the artery or better resection of the entire obliterated segment of the artery, should always be performed in preference to embolectomy.

MORRIS R. REIN, M.D.

BLOOD; TRANSFUSION

Koselig, W.: Experimental Studies on the Origin of Thrombosis. A Contribution to the Knowledge of the Blood Platelets (Experimentelle Untersuchungen über die Entstehung der Thrombose. Ein Beitrag zur Lehre von den Blutplättchen). *Arch. f. klin. Chir.* 93, 426, 447.

The author's report of painstaking and exhaustive investigations over a period of two and three-fourths years constitutes an extremely important contribution to the subject of the origin of thrombosis in general and the participation of the blood platelets therein in particular. The basis of his studies was the fact that the only known cause for thrombosis is operative intervention, whereas in medical diseases numerous causes come into consideration. He attempted to determine the nature of the active principle which is responsible for the general changes occurring in the organism after operation, is carried in the blood and eventually leads to thrombosis. In his introductory statements he cites reports from the literature concerning the effects of operative interventions, of injected protein bodies, and of irradiation upon the composition of the blood, calling attention to the striking agreement of these 3 factors, all of which without doubt cause cell destruction and influence the non-protein nitrogen, the globulin, the sedimentation, and the viscosity of the blood.

With regard to his own studies he discusses particularly the reaction of the blood platelets, analyzing the results of over 5,000 blood-platelet determinations. He states that the effect of foreign proteins (casein, novoprotein, omeadin, and intramuscularly injected autogenous blood) on the blood platelets may be summarized as a marked increase in the platelets during the first few days, then a fall to the initial level, and then a second greater rise between the eighteenth and twenty-sixth days. In animal experiments, however, surgical intervention and irradiation act differently. There is first a fall in the number of platelets and then an increase after from two to four days.

In an attempt to find substances which had the same effect upon the platelets as surgical procedures, fragments from fatty tissue, muscle or viscera were used. Muscle extract proved to be the most effective. When this was injected intravenously in a

sufficiently large quantity death occurred after a rapid lowering of the blood pressure. When it was injected intravenously in smaller quantities the blood pressure returned to normal after an initial fall. After the intramuscular administration of very fresh muscle extract the blood-platelet count decreased just as after operation, whereas when the extract had been standing at room temperature for several hours, an increase in blood platelets occurred just as after the injection of a foreign protein. This observation led to the conclusion that the products of cell destruction—which is what muscle extract consists of—differ in their effects when they are fresh and when they have been standing for some time in accordance with the successive formation of the decomposition products, adenosin, adinin, guanidin, inosin, acid, xanthin, and hypoxanthin. In some experiments it was demonstrated also that the lowering of the blood-platelet count was due to the effect of xanthin and guanidin, and that therefore the effect of these substances resembled the effect of surgical intervention. In contrast, adenyl acid and adenosin caused an increase in the blood-platelet count in the same way as foreign proteins. It is noteworthy that xanthin and guanidin, in addition to lowering the blood-platelet count, lower also the number of erythrocytes and simultaneously increase the hemoglobin content. As yet, this cannot be explained. The products of nuclear destruction following operation are the only substances which by their action produce at the same time the 3 factors necessary for the occurrence of thrombosis, viz. impairment of the circulation, injury of the vascular walls, and a change in the composition of the blood. The circulatory changes may be demonstrated especially by determinations of the temperature of the sole of the foot. As the result of dilatation of the blood vessels this is elevated several degrees for from six to eight days after an operation, independently of the axillary or rectal temperature. In agreement with this phenomenon is the frequently demonstrated clinical observation that thrombosis begins with pain in the sole of the foot. These observations explain why the incidence of thrombosis and embolism is increased in conditions with increased cell destruction, such as tumors, cramping injuries, and inflammations with much breaking down of tissue.

The third part of the work deals with a study of the manner in which changes in the blood-platelet count and resistance occur following the operative liberation of products of cell destruction. In this connection the spleen must be taken into consideration. It is known that in the spleen the platelets are not only destroyed, but also have their resistance lowered. If the spleen is removed no decrease in the number of platelets follows the injection of xanthin or guanidin; on the contrary the platelets increase and the effect of the injected materials becomes similar to that of injected foreign proteins. Conversely it may be said that under the influence of the products of cell destruction the spleen so

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Carlson, H. A. Inhibition of Respiration as a Factor in the Pathogenesis of Postoperative Pulmonary Complications *J Thoracic Surg*, 1932, 11, 196

Measurements of the thoracic and abdominal respiratory excursions and of the vital capacity of patients before and after various types of operations are presented

After operations on the upper part of the abdomen the amplitude of the abdominal respiratory excursion was markedly reduced during the first two postoperative days and then gradually returned toward normal. In some cases normal had not yet been reached when the patient was dismissed from the hospital. The thoracic amplitude was variable, but tended to increase. The respiratory rate was uniformly increased.

In operations on the lower part of the abdomen the same changes were noted, but they were less pronounced and more variable, and the return to normal occurred earlier.

The type of dressing did not influence the findings.

In operations on the thyroid, the extremities, and the thorax the changes were less striking. The rate was always increased and the amplitude of the thoracic excursions was increased except in operations on the chest itself, in which the results were variable. An increase in abdominal respiration was noted only after thoracic operations.

Respiratory excursions measured after postoperative inhalation of 10 per cent carbon dioxide for a five-minute period showed a marked temporary increase in the abdominal and thoracic excursions for from two to five minutes following the administration of the gas.

During spinal anaesthesia the amplitude of the thoracic excursions was reduced by temporary paresis of the intercostal muscles and returned to normal with the wearing off of the anaesthesia.

Avertin anaesthesia produced a reduction of both thoracic and abdominal excursions. After the anaesthetic wore off following an abdominal operation the thoracic excursions were increased while the amplitude of the abdominal excursions remained decreased.

Measurements of the vital capacity showed the most marked reduction after operations on the upper part of the abdomen and the least marked reduction after operations on the perineum and extremities. The vital capacity returned to normal slowly after abdominal operations and quite rapidly after operations on the thyroid, perineum, and ex-

trémities. After phrenicectomy it returned to normal within a few days.

The chief factor in the reduction of postoperative respiratory excursions and the vital capacity was the reflex inhibition and muscle splinting due to pain.

The decrease in the ventilation of the lower lobes of the lung resulting from the inhibition of abdominal breathing is probably an important factor in the causation of postoperative pulmonary complications.

EMILE HOLMAN, M.D.

King, D. S. Postoperative Pulmonary Complications II Carbon Dioxide as a Preventive in a Controlled Series *J Am Med Ass*, 1933, 101, 21

Aside from numerous other contributory factors, the abdominal operation itself seems to be the one practically constant factor in the development of pulmonary complications.

After an abdominal operation there is a marked reduction in the vital capacity and respiration is rapid and shallow. The resulting hypoventilation allows a collection of secretions in the bronchi which favors atelectasis or pneumonia.

The majority of cases of postoperative pulmonary complications are cases of pneumonia, pneumonitis, or partial collapse of the lung, most of which have not as yet been satisfactorily classified. Interference with respiration seems to be at least partly responsible for these conditions, and restoration of a more normal type of respiration seems to offer a rational hope for their prevention or cure.

In the period from December 1930, to December, 1931, the surgical cases studied by the author were divided into two equal groups according to sex and the type of operation, and one group was treated postoperatively with carbon dioxide inhalations while the other was not. During the first four months the treated cases showed a reduction in the number of pulmonary complications, and especially in those of the moderate and severe type.

During the next eight months the two groups were more nearly equal, but the untreated group presented fewer complications than the treated cases.

The patients not treated with carbon dioxide during these eight months were given special nursing care with frequent change of position favoring bronchial drainage.

During the year's study no cases of massive atelectasis occurred, undoubtedly because of the improved bronchial drainage by the carbon-dioxide inhalations or postural drainage.

Neither postural change nor carbon-dioxide inhalation perceptibly changed the number of chest complications in the so-called poor-risk group in

a favorable effect also on postoperative convalescence. No effect could be noted on the growth of malignant tumors.

In acute cases of suppurative infections in general, no results were obtained from transfusion. In chronic and latent cases of sepsis the results were better. Surgical treatment remains the procedure of choice in suitable cases. Of 37 cases of sepsis, 23 were cured. Repeated transfusions with immunized donor's blood in a case of otogenic sepsis were without result. Transfusion failed also in 10 cases of gas-bacillus infection and 28 cases of peritonitis.

In postoperative shock, transfusion is of value to combat the depression of the circulation caused by operative trauma. It is of no value in postoperative complications such as cerebral edema, pneumothorax, and air embolism.

In 8 cases of fat embolism transfusion was employed without success. In a case of severe poisoning due to illuminating gas it was of only temporary benefit whereas in a moderately severe case it was followed by the return of consciousness and eventual recovery.

BRON (X)

LYMPH GLANDS AND LYMPHATIC VESSELS

Antognini, G.: Clinical and Experimental Considerations on Malignant and Tuberculous Lymphogranuloma (*Considerazioni clinico-sperimentali sul linfogranuloma maligno e tubercolare*). *Riforma med.* 933 XLVI, 699.

The author reports two cases of malignant lymphogranulomatosis or Hodgkin's disease in one of which inoculations into experimental animals produced a typical glandular tuberculosis and in the other of which gave negative results. He then reports a case of splenomesenteric lymphogranulomatosis with a very marked leucopenia and a relative monocytosis, and discusses the diagnostic difficulties in such cases. He next reports a case of tuberculous lymphogranulomatosis with a very atypical clinical picture, discusses the difficulties in the differential diagnosis from malignant lymphogranulomatosis, and calls attention to the therapeutic value of gold salts in the tuberculous form. He concludes the article with a discussion of the etiopathogenesis of the disease.

methods and narcotics and sedatives give only temporary relief, it is justifiable to assume that the cause is a central infection and to give encephalitic anti-streptococcus serum, using sedatives and other means for temporary relief until the effect of the serum has an opportunity to manifest itself.

In the vast majority of the cases of the persistent type of hiccup the condition is caused by specific organisms. Occasionally, however, it is due to other causes.

The evidence suggests that epidemic hiccup is due to a specific organism. The disease is exhausting because of its tenacity. It may last for days, weeks, or months, but contagion is not usually demonstrable. Epidemic hiccup is closely related to epidemic encephalitis. By repeated passage of the organism through animals, Rosenow has demonstrated a change in the character of symptoms from hiccup to those of lethargic encephalitis.

The causative organism isolated from patients suffering from epidemic hiccup is a neurogenic type of streptococcus in short chains (streptococcus singultus). It may be obtained from the throat, the urine, and the blood.

In animals, the pathological findings do not appear to be related to the phrenic nerves directly, being confined rather to the basal ganglia, the walls of the ventricles, and the gray matter of the cortex and medulla in varying extent.

It is possible that, like epidemic hiccup, persistent hiccup after operation may often be due to a specific organism. All of the cases observed by the author were those of men. The average age of the patients was fifty-four and a half years. The condition may follow major operations on the colon, the urinary tract (especially the prostate gland and bladder), the gall bladder, the stomach, or other structures. When cases in which the hiccup followed gastric surgery are excluded, the shortest duration of the condition was four days, the longest, twenty-seven days, and the average, nine and seven-tenths days.

The persistent type of hiccup coming on after an operation seems to run a definite course which varies only in intensity and duration. At its height the only measures giving relief are bilateral phrenic-clasis and phrenicotomy. These measures are extreme and should be adopted only as a last resort.

The relationship between the organisms of epidemic encephalitis and those of epidemic hiccup is fortunate because the encephalitis antibody-globulin solution prepared by Rosenow can be applied in the treatment. In many of the cases in which this solution was used at the Mayo Clinic its effects were dramatic, all symptoms ceasing within a few hours.

Three lines of treatment should be followed in cases of epidemic and postoperative infectious persistent hiccup: specific treatment, aimed at the cause, symptomatic treatment, and general treatment.

For specific treatment, encephalitic antibody-globulin solution is administered by intramuscular injection and should be followed by massage to

facilitate absorption. In most instances the hiccup is controlled in an hour to four hours after the first dose, and in many cases it is unnecessary to give more than two doses.

Symptomatic treatment is a reasonable procedure to follow during the entire course of hiccup. Its object is to lower the tonicity of nerves and muscles.

The general treatment consists of measures tending to build up bodily resistance. Many possibilities are to be considered. Each case is an individual problem.

The treatment of hiccup due to a chemical factor must consist in removal of the cause, which is best accomplished by emptying the stomach and keeping it empty by means of large doses of a bland oil and copious enemata to induce greater peristalsis.

Specific treatment consists of gastric lavage and the administration of emetics, large doses of hot water, soda, and mustard, the use of laxatives rather than cathartics, enemas (which may contain turpentine), and the administration of pituitrin.

Symptomatic treatment may be necessary. It should not interfere with treatment aimed at the cause.

The treatment of mechanical hiccup is rarely surgical. It is usually limited to symptomatic measures and the relief of pressure by the use of hypertonic solutions.

The treatment of hysterical hiccup should be such as will have a psychological effect. The condition is caused by suggestion which may be subconscious and may be cured by persuasion.

The treatment of indeterminate hiccup is necessarily of a blind type. If the condition persists, the known specific treatments for cases belonging to the other groups should be tried.

Surgical procedures on the phrenic nerve to control hiccup attack the symptoms but not the cause. Consequently such methods should not be used until all others have failed.

The authors report two cases in which relief was obtained following autovaccination.

ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Weil, G. C., Simon, R. J., and Sweadner, W. R.
Larval or Maggot Therapy in the Treatment of Acute and Chronic Pyogenic Infections. *Am. J. Surg.*, 1933, xix, 36.

In the authors' combined method of sterilizing and otherwise preparing maggots for use in the treatment of pyogenic infections the eggs are shaken for from two to five minutes in a solution of sodium hypochlorite with from 0.12 to 0.15 per cent available chlorine. All remaining clumps are then removed by hand picking and the eggs thoroughly washed in sterile water, agitated in a 4 per cent formaldehyde solution for four or five minutes, and then washed again and implanted on sterile meat-agar media.

Early attempts at sterilizing the maggot when it

which operations were performed upon the stomach and bladder or intestines in males.

The use of postural change and carbon-dioxide inhalations resulted in only a slight reduction in the total percentage of pulmonary complications during the year of observation. A more accurate recording of complications during this period may alter the percentage.

The results of this study show routine postoperative carbon-dioxide inhalations to be of no greater value in the prevention of postoperative pulmonary complications than a frequent change of position.

EMER HODMAN, M.D.

Seklad, M. Oxygen and Carbon Dioxide Therapy. *New England J. Med.* 1933, CXXII, 1133.

Anoxemia is of two types: (1) acute asphyxia with rapidly developing deep cyanosis, loss of consciousness, convulsions, and death following sudden complete cutting off of the supply of oxygen, and (2) subacute asphyxia following a more gradual decrease in the supply of oxygen, the symptoms of which depend upon the degree of the oxygen reduction.

When oxygen deprivation is prolonged, definite changes may occur in the viscera, particularly in the nervous system. Oxygen therapy is indicated in respiratory diseases especially when cyanosis is present. In cases of pneumonia treated with oxygen the prognosis is improved. Oxygen therapy is indicated in pneumonia following surgery the incidence of which ranges from 2.5 to 4.5 per cent. Postoperative pneumonia is believed to be the result of atelectasis. In the author's opinion it can often be prevented by early inhalations of carbon dioxide and oxygen, and this form of therapy should be given not only after inhalation anesthesia, but also after spinal analgesia and the use of the barbiturates and ether.

Oxygen therapy is indicated also in disease of the circulatory system. In the cases of patients suffering from exhaustion, exposure, or anesthetic overdosage it usually results in a rise in the blood pressure, whereas in the cases of patients with arteriosclerosis, hypertension, and severe nephritis it lowers the blood pressure.

Oxygen administered during anesthesia is of special value. It is absolutely necessary when ethyl ether and nitrous oxide are used. When it is given with ether it permits a smoother anesthesia. After ether anesthesia, de-etherization may be accomplished by the administration of carbon dioxide and oxygen.

Postoperatively oxygen therapy is of value also in the treatment of the sequelae of thyroidectomy especially hyperpyrexia, hypernatremia, and tachycardia.

The treatment of asphyxia includes the following three methods: (1) the inhalation of a mixture of from 6 to 10 per cent carbon dioxide in oxygen, (2) intratracheal suction and insufflation of the same mixture, and (3) mechanical prolonged passive artificial respiration with the Dräger respirator. Carbon dioxide is indicated not only because it stimu-

lates respiration, but also because in prolonged respiratory deficiency there is an increase in the alkali of the blood to compensate for acidosis. The patient therefore becomes adjusted to the high percentage of carbon dioxide. As carbon dioxide is thirty times as diffusible as oxygen, hyperventilation will wash out the carbon dioxide more rapidly than the changed blood reaction can accommodate itself. The patient presents an alkalosis to which the respiratory center responds by apnea. In order to prevent this, a comparatively large percentage of the inspired gas must be carbon dioxide.

ALTON OSBORN, M.D.

Schnitz, H. J.: Thrombosen und Embolismen: A Statistical Study of 2,000 Cases, with 8 Tables and 3 Charts (Thrombosen und Embolien. Statistische Betrachtung neber 2,000 Fällen mit 8 Tabellen und 3 graphischen Darstellungen im Text). *Zentralbl. f. Bakt. Med.* 1933 CXXII, 330.

As an increase in thromboses and embolism during recent years has been assumed, the author reviewed the cases of these conditions which were studied in the Pathological Institute of Jena in the period from 1909 to 1930.

The material included 2,106 thromboses in men and 805 in women. Of 7,564 autopsies on men, thrombosis was found in 14.65 per cent, and of 4,674 autopsies performed on women, it was found in 17.25 per cent. Accordingly there was no special predisposition in either sex. The author agrees with Mayer that in a comparison of the incidence of thrombosis in men and women, postperital thrombosis and embolism should be considered as otherwise an entirely different impression will be gained. Three-fourths of the thromboses occur in the veins of the lower extremities and pelvis. During the years from 1909 to 1930 there was an increase in the incidence of thrombosis. This was due chiefly to an increase in postoperative thrombosis. The number of fatal embolisms did not increase, but fatal embolism occurred more frequently in women. The author observed so-called fulminating embolism with equal frequency after medical treatment, operation, trauma, labor and abortion. Ten per cent of all thromboses are of an infectious nature, but thrombophlebitis plays no rôle in the development of fatal embolism. P. CARRER (G).

Mayo, C. W.: Hiccups. *Surg. Gynec. & Obst.* 1933 LV, 700.

Historically the subject of hiccup is old. References to it go back hundreds of years, both in non-medical and medical literature. The treatments have been numerous and varied, but in many instances the relief of the condition is as much a problem today as ever.

In many cases it is difficult to determine the cause of the hiccup. This is true particularly after operation, when the picture is masked by the effects of surgery. One method of treatment is lavage. Another is the administration of soda water. If these

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Packard, C. The Biological Effectiveness of High-Voltage and Low-Voltage X-Rays. *Am J Cancer*, 1932, xvi, 1257

The experiments reported in this article show that the effect produced by roentgen rays on certain biological materials is the same whether the irradiation employed is extremely hard or soft. Moreover, the magnitude of the reaction called forth by both qualities is identical with that produced by irradiations of intermediate wave length when the doses, measured in r units, are also equal. In all of the experiments the intensity of the different beams was determined by means of open ionization chambers, and the wave lengths by the use of spectrometers. The biological materials consisted of drosophila eggs and mouse-tumor particles.

The opinion that the effectiveness of roentgen rays is wholly independent of wave length is by no means general, but a survey of the literature shows that it is held by an increasing number of investigators in this field.

Experiments and observations illustrating the different opinions on this subject are cited briefly. Various test objects have been used and the results judged on the basis of growth or cytological changes, quantitative chemical tests, or erythema reactions.

The experiments conducted by the author are described in detail and the results tabulated. The report is summarized as follows:

1. The biological effectiveness of X-ray beams of wave lengths 0.05, 0.08, and 1.70 Å produced at 550, 300, and 12 kv respectively has been studied. The test objects were drosophila eggs and mouse-tumor tissue.

2. Equal doses of these three qualities of irradiation, measured by air-ionization chambers, produced equal quantitative results. The eggs in their reaction showed complete independence of wave length. These data confirm the conclusions previously arrived at in experiments with wave lengths of 0.20, 0.30, 0.50, and 0.70 Å.

3. The adequacy of the physical and biological methods used is briefly discussed.

ADOLPH HARTUNG, M D

Langer, H. Roentgen Treatment Over Vegetative Nerve Centers or Ganglia in Diseases Presenting Symptoms of Disturbances of the Vegetative Nervous System. *Am J Roentgenol*, 1932, xxviii, 747

On the basis of experimental and clinical observations published previously by himself and others, which are cited in some detail in this article, the author has attempted during the last five years to

influence the sympathetic nervous system by roentgen irradiation in certain diseases with typical symptoms of hyperexcitation. The roentgen irradiation was applied either directly to the autonomic nerve center in the diencephalon or to other autonomic centers. All of the cases were treated by short wave irradiation with from 185 to 200 kv, filtration by 0.5 mm of copper and 3 mm of aluminum, a skin-target distance of 35 cm, a wave length of 0.166 Å, and 4 ma.

Attention is called to the fact that the greatest difficulty to be overcome is due to the fact that the pathological sympathetic nervous system does not react like the normal sympathetic nervous system. The physiological or pharmacological reaction may be found reversed when the sympathetic nervous system is in a pathological condition, and great care is necessary in making deductions of a clinical nature from roentgen treatment of the normal sympathetic nervous system.

The conditions treated by the author included skin lesions, asthma, menopausal disturbances, hyperthyroidism, neuralgia, sciatica, and arthritis. The results were particularly good in skin diseases in which overirritability of the sympathetic nervous system was manifested by itching, trophic changes, transudates, or exudates. Several illustrative cases are reported in detail.

In discussing the other conditions the author calls attention to various theories advanced by others to account for the good results. By some, these are ascribed to an effect exerted on structures other than the sympathetic system which are directly or indirectly responsible for the symptoms. The author believes that the beneficial effects are explained by the action of the irradiation on zones of centers in the areas treated. By treating these centers directly he obtained practically identical or even better results.

In conclusion Langer says that the influence of roentgen irradiation on the sympathetic nervous system is due to (1) a stimulating effect and (2) a quieting effect. He advocates a trial of roentgen treatment before surgical removal of sympathetic ganglia or trunk resection is undertaken. His own observations and those of other roentgenologists indicate that the roentgen treatment described by him has no injurious permanent effect.

ADOLPH HARTUNG, M D

Coutard, H. Roentgen Therapy of Epitheliomata of the Tonsillar Region, Hypopharynx, and Larynx, from 1920 to 1926. *Am J Roentgenol*, 1932, xxviii, 313

The incidence of cure in the cases of epithelioma reviewed by the author is shown in the table

has reached the size best suited for implantation into wounds have been almost totally unsuccessful. This is due to the fact that bacteria are present within the gastro-intestinal tract of the maggot and cannot be reached by chemicals because of the impermeable chitinous skin and the fact that the maggot will not swallow the chemical. However the procedure developed by the authors indicates that sterilization of the partly grown maggot is possible. It is applied only to the maggots that show contamination after egg sterilization. The basis of the treatment is a solution of iodine in a special salt solvent. The maggots are immersed for one half hour in this solution diluted to a strength of 0.05 per cent free iodine. When removed from this bath the maggots are bright orange but within a few hours fade to a pale creamy white. In 40 per cent of the cases in which maggots with known contamination have been so treated the authors have been unable to recover the bacteria from the maggots even after the maggots had been permitted to live in the bacterial culture medium for several days.

Having made every possible attempt to obtain complete sterilization of the larvae the authors have shown that after long incubation, a good proportion of cultures taken from a brood of treated larvae are aseptic containing unidentified organisms and certain non-pathogenic organisms. This finding, associated with the open type of wound dressing, precludes the possibility of maintaining strict asepsis throughout the treatment. Nevertheless the authors have attempted to standardize a careful surgical technique to prevent foreign contamination.

Twenty-four hours after the operation the wound and the focus of infection are completely exposed the plain gauze packing is removed from the wound, and the surrounding healthy skin surface is cleansed with alcohol and ether. An application of mercurochrome is then made and later an application of collodion. This procedure prevents the development of dermatitis and relieves any irritation which may

result from the crawling of the larvae upon the skin surface. The wound is then held open by the insertion of small metal self-retaining retractors especially devised for this work, the treated larvae are implanted, and the wound is covered by a No. 20 copper mesh screen supported and attached to the skin by adhesive tape. The dressing is applied carefully without creases and the surrounding margin is supported by a bandage. The wound is arranged to favor drainage by gravity if possible, and heat is supplied by an ordinary electric light bulb.

A bacteriological study of the wound is made prior to the implantation of the larvae and cultures are made at each dressing in order to determine any qualitative and quantitative changes in the bacterial flora of the wound.

To obtain the greatest degree of larval activity within the wound, it is essential to select healthful appearing and active forty-eight-hour-old larvae. Larval activity may be reduced by excessive heat such as may occur when a hot-bot solution is used in transferring the larvae from the original container to the wound. It is important to store the larvae in a refrigerator until the time of implantation. Wide-open wound drainage must be established as an important adjunct in the treatment. The wound must at all times be kept clear of fluid so that the larvae are permitted to extend their activity over the entire wound, particularly at the site of infection. Under such conditions the larvae remain healthful and active and very few are found dead when the dressing is changed on the third or fourth day following the implantation. The authors implant the larvae every third day after the wound has been carefully cleansed with saline solution. In fifty-six cases of various types excellent results were obtained even in acute cases of osteomyelitis.

In the use of larval therapy in infections of soft tissues it was found that no particular pyrogenic organism repels the attack or delays the activity of the larvae.

ARNOLD F. BOW, M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Sozon-Jarošević, A., and Sewald, L. The Influence of the Nervous System on Skin Regeneration (Ueber Einfluss des Nervensystems auf die Hautregeneration) *Nov. chir. Arch.*, 1932, **xxv**, 331

To determine the influence of the sympathetic nervous system on the rapidity and course of regenerative processes in the skin, the authors carried out experiments on dogs and rabbits.

In the first series the sympathetic innervation of one ear was interrupted by resection of the second superior ganglion of the sympathetic trunk (in the rabbit) or of the superior ganglion of the sympathetic vagus nerve (in the dog) and the innervation of the other ear was left undisturbed. Round fragments of skin and subcutaneous cellular tissue, extending to the cartilage, were cut out from both ears with a special circular knife. It was observed that the skin wound on the side deprived of sympathetic innervation healed much more rapidly than on the normal side. The healing process was the same, but more rapid and energetic. The granulations appeared two or three days earlier, the suppuration was much more intense, the wound became clean earlier, and the necroses of cartilage were fewer and smaller.

Healing occurred more rapidly on the side of operation than on the control side also after resection of the abdominal sympathetic trunk and after division of the sciatic nerve.

It therefore appears that exclusion of the sympathetic innervation in a given part of the body exerts a favorable influence on healing processes. This favorable effect is probably due to the active hyperaemia of the organ deprived of sympathetic innervation, which brings about a more active metabolism and favors cell propagation and growth.

In the second series of experiments, in which unilateral ligation of the carotid was done and caused intense and long-continued anaemia of the ear on the same side, the healing processes on the side operated upon occurred more slowly and less actively than on the normal side. This series of experiments appeared to confirm the assumption that hyperaemia is the only factor responsible for the quicker occurrence of healing after sympathetic denervation.

However, interventions on the sympathetic ganglia are too complicated to be explained entirely by a simple action on the vascular tonus. In the third series of experiments, in which simultaneous ganglion extirpation and ligation of the carotid were done on nine animals, wound healing again took place more rapidly on the side deprived of sympathetic innervation than on the normal side. These observations might be explained by marked dilata-

tion of the capillaries in the anemic organ, but on roentgenological examination with contrast filling the arterial system of the denervated side was so poorly filled that only the larger vessels could be clearly distinguished, whereas on the control side all of the vessels were distinctly visible up to the precapillaries. Therefore more rapid healing occurred in spite of a diminished reflux of arterial blood.

All of these facts can be explained only by a specific trophic action of the sympathetic nervous system on the growth and propagation of tissue. The conclusion may be drawn that the sympathetic system guides and regulates the capacity to propagate that is peculiar to the cells. After the ganglion is removed and the inhibiting influence is eliminated, the body cells regain their primary vitality and begin to propagate more rapidly than is normal. To prove this assumption experimentally, continuous chemico-biological stimulation was applied to the sympathetic system by the injection of sterilized pus into the ganglion. The result showed that healing of the wound was greatly retarded on the side treated in this manner (up to from twenty-two to twenty-eight days).

From all of these experiments it may be concluded that the sympathetic nervous system exerts an inhibitive action on the tissues, and that irritation of the system retards regeneration while inhibition (hypofunction) accelerates regenerative processes. The rôle of the blood vessels is not thereby diminished, but on the contrary, is fully maintained. However, the specific action of the nervous system, and particularly of the sympathetic nervous system, on the tissues must not be ignored. This action appears to regulate and inhibit the basal metabolism of the cells. G. ALIPOV (Z)

Fleming, A. Lysozyme. *Proc. Roy. Soc. Med., Lond.*, 1932, **xxvi**, 71

Lysozyme is a bacteriolytic agent which was first found in cultures made in 1921 from the nasal mucus of a person with an acute cold. The author discusses its properties, its wide distribution, and its possible importance in immunity.

Lysozyme has the characters of a ferment. Its action increases up to a temperature of 60 degrees C., but it is destroyed at temperatures over 65 degrees C. It withstands boiling for several minutes. It acts best in a neutral medium. It is not dialyzable through parchment. It can be preserved for a long time. It is probably inherent in all animal cells and constitutes a primary agent for the destruction of bacteria. In experiments it was found to be the same wherever it occurred—whether in human tears, egg white, turnips, or the organs of the body. In general it is present in all tissues. Of the secretions and body

	Two years	Three years	Four years	Five years	Six years	Seven years	Eight years	Nine years
Tonsillar region								
Total cases	40	46	46	33	20	15	10	7
Number cured	12	18	12	6	5	3	3	3
Percentage cured	30	39	26	18	25	20	30	43
Hypopharynx								
Total cases	20	29	24	60	45	26	12	7
Number cured	12	13	7	7	4	2	1	0
Percentage cured	60	45	29	12	9	7	8	0
Larynx								
Total cases	77	77	77	60	43	31	19	8
Number cured	23	23	22	15	7	6	4	4
Percentage cured	30	30	28	25	16	19	21	50
Total number of cases		1	1	162	108	79	47	15
Total number cured	53	50	48	26	16	8	8	6
Total percentage cured	69	65	62	16	14	10	17	40

In the cases of epithelioma of the hypopharynx the local results were as good as those obtained in the cases of epithelioma of the tonsillar region and the larynx, but the incidence of cure was lower because of the development of distant metastases.

The same technique was not employed in the entire series of cases. Contard now uses 175 kv. a ma. a 2-mm. filter of steel, a distance of 50 cm., and a field of 50 sq. cm. One dose of from 25 to 50 R (Holtznecht units) or from 300 to 5000 r units is distributed over ten days in 2 daily applications of one hour each (twenty hours). The entire dose is given through the same portal of entry on the lateral aspect of the neck. Two areas are thus treated.

Since the radiosensitivity of cancer cells of epithelial origin is the same as the radiosensitivity of the germinal cells of the epidermis, destruction of

the latter is inevitable if the irradiation is sufficient. In the case of the germinal layer of the mucous membrane, the destruction begins about two weeks after the treatment and goes on to complete denudation of the dermis. Repair is complete after about four weeks, when the radio-epithelitis develops with loss of all of the epithelial layers down to the dermis. This, in turn, is repaired in a period of about six weeks.

Other complications mentioned besides the radio-epithelitis and radio-epithelitis are severe trismus (sometimes requiring tracheotomy), hemorrhages, dryness of the mouth and mucous membrane, pyrexia or loss of taste, dysphagia, myxomatous changes in the trachea, and peritis of the arms. There may become chronic, but the most dangerous late complication is necrosis of bone or cartilage.

CHARLES H. HARRICK, M.D.

MacKee, G M The Treatment of Cutaneous Malignant Neoplasms *Am J Roentgenol*, 1932, xxviii, 738

Early recognition and treatment of cutaneous conditions which may result in cancer and of already developed malignant neoplasms of the skin are of great importance. The recognized methods of treating cutaneous malignant neoplasms are scalpel surgery, surgical diathermy, roentgen-ray irradiation, and radium irradiation. In general, operable metastatic cancer of the skin and official mucous membranes should be given surgical treatment. This includes both scalpel surgery and surgical diathermy.

A properly performed biopsy does not cause metastasis and will indicate the most suitable therapeutic method.

For many basal-cell epitheliomata, roentgen irradiation is usually satisfactory. For unselected cases of metastatic cancer of the skin, radium irradiation is better.

Electrocoagulation can be employed satisfactorily in cases in which scalpel surgery would be difficult or impossible. It is used most frequently for the destruction of malignant neoplasms. It seals the blood and lymphatic vessels.

NATHAN N. CROHN, M D

Kotzian, E Is There Such a Thing As Giant-Cell Sarcoma? (Gibt es Riesenzellensarkome?) *Frankfurt Ztschr f Path*, 1932, xliii, 484

The author discusses the epulis, the various forms of osteitis fibrosa, the encapsulated myelogenous giant-cell tumors of bone, and the giant-cell tumors of tendon sheaths. From a review of the literature and a number of his own cases, he comes to the conclusion that giant-cell sarcomata really occur. Sometimes, however, they lack distinct clinical and histological characteristics. Nevertheless, in most cases, a careful examination of biopsy specimens, which should be as large as possible, will permit a clear differentiation between giant-cell granulomata and true giant-cell sarcomata. In contrast to the systematic arrangement of the cells in the granuloma, the cellular structure of the sarcoma shows a certain arbitrariness in variety and size and in the relations of the cells to each other. It would be a mistake to exclude the giant-cell sarcoma from pathology. This was shown especially by Kotzian's case with lung metastases. Clinical treatment must be planned to a great extent on an exact anatomical diagnosis. In discussing individual cases the author goes into greater detail regarding the diagnosis between granuloma and sarcoma and the origin of giant cells.

JUNGHAANS (Z)

fluids, all except normal urine, sweat, and cerebrospinal fluid contain it. On the tissues, its action is most powerful in cartilage and least powerful in the brain. Tests carried out by the author showed a most striking bacteriostasis of sensitive test cood. Lysis manifest to the naked eye can be obtained with a 1:5,000,000 dilution of human tears and with egg whites of half that strength. In leucocytes the strength of lysozyme is about the same as in human tears. Lysozyme acts most strikingly on non-pathogenic bacteria, but when it is allowed to act in the full strength in which it occurs in some parts of the body it attacks pathogenic organisms.

M. HERBERT BAXTER, M.D.

Raffo, A. H.: Heliotropism of Cholesterol in Relation to Skin Cancer. *Am J Cancer* 33: 214, 42.

The author found that a rat tumor may contain more than twice as much cholesterol as is found in the whole organism of the host.

Later investigation of animal and human tumors confirmed this observation, showing not only a distinct fixation of cholesterol in neoplasms, but also greater activity on the part of the organs which produce it. Moreover it was found possible to inhibit or prevent the growth of a tumor by keeping the animals on a cholesterol-free diet.

The high cholesterol content of precancerous lesions is accompanied by hypercholesterolemia. Accordingly the question arises whether the latter is caused secondarily by the presence of neoplastic tissue or is primary and the result of preparation of the tissues by endogenous and exogenous (dietary) factors. The influence of a diet rich in lipoids on the development of a tumor and the relation between cholesterol and the growth of normal and neoplastic tissue *in vitro* seem to indicate that the latter is the case. In the degree to which cell multiplication occurs in cultures, the amount of cholesterol in the surrounding medium diminishes. In the case of tumor cells the diminution may amount to from 7 to 83 per cent, whereas in normal tissues it is only from 8 to 16 per cent. Observations *in vivo* demonstrated absorption of cholesterol by neoplastic tissues. In these experiments, which were carried out on human tumors as well as tumors of rats and chickens, it was found that the blood in the vein leaving the tumor contained less cholesterol than the arterial blood going to the tumor.

The cholesterol content of the organism as a whole increases with age.

Another factor to which the author ascribes great importance with respect to preparation of the tissues for malignancy is pregnancy in which the hypercholesterolemia increases proportionately with the age of the fetus until it reaches very high values (3 mgm. per 1,000). Under these conditions a malignant tumor assumes greater malignancy than in the non-pregnant woman.

The skin is more frequently attacked by cancer than any other organ of the body.

In many cases the skin of the face has been found to contain from three to six times as much cholesterol as the skin of the abdomen, and always it has been found to contain at least twice as much as the latter. On the other hand the cholesterol content of the subcutaneous fat in the two sites is approximately the same.

It was thought that the large amount of cholesterol in the skin of the face might be due to exposure to sunlight, and further investigation confirmed this assumption.

When the amount of cholesterol in the skin of the abdomen, cheek, forehead, and nose was compared, it was found to be two or three times as high in the unprotected regions as in the protected regions. The skin of the abdomen contained the smallest amount and the skin of the face showed distinct differences in its content according to whether as on the forehead, it had been shaded by a hat or, as on the cheeks and nose it had been exposed to the sunlight.

As these observations suggested that the varying amounts of cholesterol in the skin are referable to heliotropism, experiments were carried out on white rats, one group of which were exposed to sunlight and the other to ultraviolet rays. Control pieces of shaved skin were removed from the left side of the back, and the right side of the back was exposed to the sunlight for two-hour periods over a number of days. The animals were put into wooden cages covered with a lead filter containing an aperture at the part of the body to be irradiated.

A progressive increase in cholesterol from 25 to 100 per cent was found.

The author believes that these results are sufficient to show that cholesterol is fixed in the skin because of heliotropism. In investigating the problem further he made a study of photo-activity by exposing a photographic plate to cholesterol that had been irradiated with sunlight, ultraviolet rays, X-rays, or radium. Especially when the cholesterol had been subjected to sunlight and ultraviolet rays he noted photo-activity persisting for several days.

This photochemical effect may be ascribed to an emanation which in its turn may be referred to oxidation—the irradiation provoking a modification of the cholesterol molecule with the intervention of oxygen from the air. When irradiation is carried out in pure oxygen or ozone photo activity is more intense than in the presence of air and irradiation of cholesterol in carbon dioxide, nitrogen, hydrogen, or *in vacuo* does not cause photo activity.

Accordingly there seems to be some connection between the large amount of cholesterol in areas of skin exposed to sunlight and the high incidence of tumors in such areas. The incidence of skin cancer is highest on the nose which is most exposed. In the skin of the negro which resists the absorption of light because of its pigmentation, carcinoma is very rare.

The author suggests that cholesterol prepares the tissues for subsequent malignant growth by acting as an accumulator of light. JOSEPH K. N. RIZ, M.D.

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Supplementary to
Surgery, Gynecology and Obstetrics

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COLLECTIVE REVIEW

PUERPERAL SEPSIS

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INTRODUCTION

PUERPERAL sepsis continues to stimulate medical and public interest because it is such an important contributor to maternal mortality. The medical profession is aware of this problem and is making efforts to solve it. Progress cannot be measured by international statistics which seem to be the basis for nonmedical articles condemning the apparent lack of progress in obstetrics in the United States.

Emerson says, "Preventable puerperal deaths occur throughout the world, but international comparisons based on national mortality rates are misleading."

"In some European countries a birth is not reported as a living birth unless the child survives until it is baptized, which may not be for several days. Thus the live birth basis for maternal mortality may be seriously distorted."

He says that probably of all the changes in the past thirty years in the United States which have tended to increase the maternal mortality rates without implying neglect of attendance, the most important has been the drop in the birth rate with the inevitable increase in the number of primiparae in relation to the total pregnancies among married women and the accompanying postponement of the age of the first pregnancy.

He suggests cooperation between the city or state health office in which maternal deaths are recorded within twenty-four hours of their occurrence and the organized medical profession which through its obstetricians can obtain by committee or personal inquiry immediate, accurate, and

complete information as to all the factors which led to the particular death under consideration. Thereby a proper analysis of the maternal mortality can be made.

ETIOLOGY

Such studies are now in progress in New York. In Chicago, plans are being considered to obtain these statistics, and probably other cities are following.

From Massachusetts a committee reported a five-year study of the incidence of puerperal septicæmia. They found that 32 per cent of maternal deaths during the puerperal state were due to puerperal septicæmia, while in the United States as a whole 40 per cent were due to that cause. The rôle that abortions play in the production of puerperal septicæmia has not been realized by the laity nor by the profession until recently. The Children's Bureau report, Bureau Publication No. 203, page 124, states "Of the 3,234 puerperal deaths in 1927 in 13 States, 1,278 (40 per cent) were due to puerperal septicæmia. It was found that abortions preceded 45 per cent of the deaths from septicæmia. Of a total of 570 abortions, 309 were induced, 154 were spontaneous, 19 were therapeutic, and for 88 the type was unknown. Thus abortions known to be induced were responsible for about one-fourth of the deaths from sepsis."

In 1929, in Massachusetts, 19 per cent of all deaths from puerperal septicæmia were due to abortions, which were, so far as could be ascertained, self-induced.

The committee found that in order for these studies to be scientific, there must be cooperation of the obstetrician, bacteriologist, and biochemist. According to their experience, the profession showed a desire amounting to enthusiasm to do all in its power to improve the practice of obstetrics.

In an analysis of 100 maternal deaths in Canada, Phair found 30 per cent due to sepsis.

Phillips suggested a chart for recording monthly morbidity in obstetrical departments so that permanent records may be had and readily compared.

A most worthwhile matter of fact report of maternal mortality in Illinois by the State Health Director Hall, was published in the State Journal and should receive national attention. It answers half truths and incorrect statements made by propagandists. In 1930 a typical year 190 deaths occurred in Illinois from puerperal septicemia. One hundred and seven (54 per cent) were preceded by abortion. In 35 cases the abortion was admittedly self-induced. An interesting analysis of the statistics was presented. The mortality rate of puerperal septicemia in Illinois in 1930 among patients attended by licensed physicians was less than 1 death per 1,600 cases of confinement.

Outside of Chicago there was a death rate of a trifle more than 1 death per 3,000 cases in hospital deliveries, while the death rate in the home deliveries was about 1 death per 1,775 live births. Therefore the risk of fatal child-bed fever among mothers whose babies were born in hospitals was less than one-half the risk among those who stayed at home. Can there be a more concise concrete answer to those who try to delude themselves into thinking that home deliveries are safer than hospital deliveries? This report emphasizes the error made by accepting gross statistics and trying to compare them with the statistics of other states or countries. Hall is worthy of special commendation, and it is suggested that this article be republished in a national medical journal and perhaps in a lay women's journal.

Thomas also demonstrated that at first glance at data it would appear that medically attended confinements showed an increased risk of puerperal sepsis and that the disease was more likely to end fatally in these cases. However on further scrutiny it was found that the majority of the women were attended by a midwife and doctor and that the cases included all difficult and abnormal deliveries and those in which instrumental interference was adopted either from choice or necessity.

Macgregor reported on the governmental regulations regarding the reporting and cure of puerperal fever and puerperal pyrexia in England and Scotland. These regulations resulted from a discussion of the subject by the Section of Obstetrics and Gynecology with the Section of Epidemiology and State Medicine and the Society of Medical Officers of Health. The effect of successive administrative measures and the analysis of the information obtained gave the following data. Because of increasing accuracy in diagnosis and certification of the puerperal causes of death, some of the recorded increase in the mortality rate may be more apparent than real. A comparison of statistical studies, as between Scotland and England, was rendered difficult and unsatisfactory because of the difference in the methods formerly adopted in the classification of deaths. Yet there are those who try to compare the statistics of various countries of the world. During 1931 the mortality rate for Glasgow due to puerperal sepsis, including deaths from post abortive sepsis, was 3.1 deaths per 1,000 births.

The effect of notification of puerperal pyrexia had been to double the number of known cases of puerperal sepsis occurring annually. In half of the cases so recorded pyrexia meant sepsis. Some treatment was not undertaken and 93 per cent of all cases of puerperal sepsis were treated in the hospital, the number of cases admitted to hospitals for treatment being thereby almost doubled. The epidemiological picture had become much clearer as fewer cases and fewer deaths escaped detection. Although the case mortality in hospitals was as low as 13 per cent and 60 per cent of the women were admitted on or before the third day of illness, the number of fatal cases had not diminished. In explanation of this there were 2 outstanding facts. Deaths due to sepsis following abortion (one fifth of the total) were trifling, if anything, to increase. Epidemiological studies were unable to explain a very severe and fatal type of infection which continued to occur. The majority (at least 70 per cent) of these grave septicemic cases were due to infection by a hemolytic streptococcus, concerning the prevention or treatment of which little is known. However of 200 fatal cases investigated, some departure from the normal was found in 90.

From a study of statistics, Thomas made the following epidemiological observations. The liability to infection appeared to be almost equal at all ages, but steadily increased after the age of thirty. Although the danger of the development of sepsis is greatest after the first pregnancy the incidence of a fatal outcome is no greater among

primiparæ than among multiparæ. After the sixth pregnancy the mortality shows a definite increase. Illegitimacy played only a minor part in the causation of sepsis or of fatal infection. Septic abortion and miscarriage played important parts in the maintenance of puerperal sepsis and mortality rates. Septicæmias caused more fatalities than gross pelvic infection or peritonitis. A previous puerperal sepsis may predispose to a more severe type of illness and to a fatal issue, but the statistics did not show whether the occurrence of infection was itself precipitated by this factor.

Studies of the general defense mechanism in puerperal sepsis were not found in the literature. Zocchi noted that in the normal puerperium the permeability of the capillaries remained low except on the second and third days and the endothelial sign was always negative. In the pathological puerperium the permeability of the capillaries was always high and was highest in the serious and fatal cases. Zocchi considered such a finding of prognostic value.

In an analysis of the records at the Oxford Maternity Home for the five years from 1926 to 1930, Leyton found that in the women in whom a chronic septic focus had been noted at the antenatal clinic the temperature usually rose to 99 degrees F on 3 or more occasions during the puerperium (usually ten days). A similar puerperal temperature curve was found in women without chronic septic foci but with long labors. In cases of short labors, the temperature remained even during the puerperium. The increased frequency of prolonged labors was considered to be due to the decreased amount of magnesium in foods resulting from the extended use of artificial manures and the tendency to "purify" such articles as salt and flour.

The curve of the incidence of puerperal infection rose during March and April, following closely the peaks of the curves of the usual epidemic of respiratory diseases occurring in the late winter and the early spring (Boston City Hospital, 1926 to 1930 inclusive). Williams quoted these statistics: 15 per cent of the infections followed cesarean section, 30 per cent followed operative vaginal deliveries, and 55 per cent followed spontaneous deliveries. Therefore, although the proportion of spontaneous deliveries greatly exceeded that of operative deliveries, nearly one-half of the cases of sepsis followed operative delivery.

That the source of infection with hæmolytic streptococcus during the puerperium may be the throats of medical attendants and nurses has been suggested and proved by various workers

and observers. Logan studied the effect of tonsillectomy on the incidence of the organisms. He isolated the organism from 7 (36.8 per cent) of normal control nurses and 5 (26.3 per cent) of the nurses whose tonsils had been dissected out. He concluded that the results of tonsillectomy do not justify the performance of this operation for the sole purpose of ridding the throat of streptococcus hæmolyticus.

Marconi described the typical effect of influenza on pregnancy, labor, the puerperium, and the newborn child. In addition to the local findings of infection, he isolated the diplostreptococcus brevis from the blood stream, the endometrium, and the bloody lochia. Thus definite evidence was presented that a secondary puerperal sepsis was produced. All of the 7 women recovered, the epidemic was mild. Since the condition is contagious, it is important to isolate all women who have shown symptoms of such an attack. When the mother was in the active stages of the infection the newborn child was also attacked.

Batsweiler again emphasized the danger of coitus in the last six weeks of pregnancy, inducing early rupture of the bag of waters and introducing pathogenic bacteria. He reported a fatal case in which spermatozoa were found in the uterus.

The influence of premature rupture of the bag of waters in producing fever in the puerperium was investigated by Gubanow and Kutschadse. Vaginal examination when the bag of waters was ruptured was followed by a febrile puerperium in 15.9 per cent of the cases, whereas of the cases in which a vaginal examination was not made the puerperium was febrile in only 10.2 per cent. After operative procedures which require entering of the uterus the incidence of fever in the puerperium was nearly doubled. According to Gubanow, the loss of the amniotic water is an indication for hospitalization. According to Trillat, the dangers are increased by cesarean section.

Some Russian investigators, among them Smorodintzeff, maintain that, the self-cleansing mechanism of the vagina being effective, the vagina need not be considered a means of passage for the streptococcus. Only seldom does autogenous infection occur from hæmolytic streptococci on the external genitalia.

In a bacteriological study of the uterus in 40 women on two days of the puerperium, Petrova found that the bacteria passed the barrier of the internal os during the first week. He attributed their ascension to mechanical factors, assuming that the lochia containing bacteria formed a capillary way from the vagina to the cervix and uterine cavity. Organisms were found in the uter-

line cavity within the first twenty-four hours and at times on the third, fourth and fifth days. During the first week a certain self-cleansing of single types of bacteria or of definite combinations of various types occurred. This change was brought about by the bactericidal powers of the uterus, the discharge of fluid, and the antagonism of the micro-organisms to each other.

The presence of pathogenic organisms in the uterus does not necessarily cause clinical changes in the course of the puerperium.

Logan observed that vaginal flora deviating from what had been regarded as the ideal seemed to predispose, to some extent, to puerperal sepsis. However, although many unknown factors enter in the incidence of sepsis was considerably higher after instrumental interference than after spontaneous labor.

The acidity of the vagina had little or no effect in inhibiting the growth of streptococci. However, these organisms were considered of low or no pathogenicity.

Of 134 pregnant women studied bacteriologically and followed 7 per cent had a septic puerperium. It was observed that the presence of non-hemolytic streptococci or colon bacilli in the upper vagina and cervix during pregnancy was of no importance in the production of puerperal sepsis.

Bacteriological examination of the cervix in the cases of 86 women at the beginning of labor and during the puerperium revealed colon bacilli in 19 per cent and streptococci of the non-hemolytic or viridans type in 35 per cent. Although the presence of these organisms in the uterus during the puerperium may be considered normal, there was evidence that in the complicated labors and operative deliveries there might be a massive introduction of these organisms into the uterus during labor followed by puerperal sepsis.

The time of danger from the introduction of organisms from without is during labor and the first few days after labor. At the present time it is still impossible to determine with any certainty why one woman develops puerperal sepsis while another does not.

Further reports of various types of bacterial invasion of the puerperal uterus were found in the literature. Downer reported the case of a woman with puerperal sepsis accompanied by a profuse scarlet rash. The Schultz-Charlton reaction was positive. The patient recovered. She received antiscarlet fever serum and intra-uterine therapy.

Stokey and Downs discussed the erythematous eruptions simulating scarlet fever which may develop in the puerperium. They mentioned 8 cases and reported the case of a patient with a scarla-

tiniform rash who died on the eighth postpartum day with symptoms of peritonitis. The exotoxin elaborated by the isolated streptococcus hemolyticus did not check with the commercial toxin of scarlet fever as tested by skin reactions in scarlet fever. However, these exotoxins were neutralized by scarlet fever antitoxin. Stokey and Downs concluded from their experience that scarlet fever developing in the puerperium was a puerperal infection due to a streptococcus producing an exotoxin capable of causing an erythematous eruption. If this organism invaded the blood stream, the mortality was high. If the infection was confined to the uterus, the constitutional reaction was slight, and although there was an erythematous eruption due to the absorption of the erythema-producing exotoxins, the prognosis was excellent. The therapeutic efficiency of the antitoxin was in direct ratio to the exotoxin elaborated. Neutralization of the erythema-producing exotoxins of streptococcal origin may be of great therapeutic importance.

Bacillus welchii infections of the uterus were reported by Crooks, Dobbek, Kilduffe and Allman. In cases with invasion of the uterine musculature they were usually fatal, whereas in those with infection of only the contents or of the lining of the uterus recovery resulted.

Parysek and Ecker reported a case of bacillus proteus puerperal septicemia of several weeks' duration with recovery.

Tuberculous puerperal endometritis followed by tuberculous meningitis was described by Martinez.

Staphylococcus aureus was the etiological factor in a case of pyemia following an acute infective peritonitis of the pouch in a patient with a septic abortion (Cleland).

In a series of cases of puerperal sepsis studied by Kvater and Rafalkes, mixed infections were found to be most common and streptococcal infections next in incidence.

In an analysis of 800 cases of puerperal fever Thomas found that the aerobic streptococcal infection was by far the most potent cause of death. Although there may be a great variety of organisms causing sepsis, the greater the severity of the disease the higher was the incidence of streptococcal infection. Of the fatal cases, streptococci were found in the local lesion in 73.5 per cent and the blood contained the same organisms in at least 76.8 per cent.

PATHOLOGY

The pathogenesis of puerperal sepsis as conceived by Sommer has a logical trend. Sommer's

theory was based on a total of 400 cases of severe puerperal general infection, but especially on 42 cases of puerperal fever observed during 1930 in the Virchow Hospital.

After feverless, spontaneous delivery, bacteria were found in the uterine cavity regularly within forty-eight hours. Local disease, puerperal endometritis, occurred only when the bodily resistance was lowered or the organisms were of more than the usual pathogenicity. Even then there was no flooding of the body with bacteria, but merely an invasion of the blood stream by toxins. This invasion was frequently accompanied by a chill. The chill was the reaction of the body to an immunization by toxins which was due to the absorption of toxins from the uterus or the liberation of toxins by the destruction of bacteria in the blood. The interval between the bacterial invasion and the toxic chill was about two hours.

In some cases the endometritis may be the source of a general infection. When the condition ran a febrile course no reactions of resistance were encountered, the patient was overcome rapidly. In other cases there was time for the development of phlebitis of the small veins of the uterus without, however, a sufficient interval for the development of a protective thrombosis. In cases with better resistance, thrombosis will develop in the small veins and keep the process localized for a time. To lymphangitis the body was able to offer little resistance. The lymphogenic advance of the bacteria followed the course of the vessels, caused an interstitial phlegmon of the parametrium, or broke through and produced peritonitis. The perivascular or the interstitial phlegmonous processes led secondarily to local disease of the vessels, especially of the veins, and infection of the venous walls was followed by thrombosis as a defense reaction. Under these conditions the thrombosis was to be regarded, not as an etiological factor in the disease, but as a curative process. In some cases the metastatic focus broke down, forming secondary septic foci from which bacteria entered the blood stream.

In addition to the lymphogenic and the secondary hæmatogenic dissemination, there was a primary hæmatogenic spread due to the breaking down of endophlebotic thrombi. This primary hæmatogenic invasion of the blood stream by bacteria may lead to the formation of abscesses in the walls of veins at a distance from the focus of infection. Like endocarditis, the abscesses were always secondary manifestations.

From these theoretical considerations it followed that sepsis and pyæmia could not be separated clinically as they were manifestations of the

same process. Pyæmia developed in puerperal general infection when the resistance of the body was better or the pathogenicity of the bacteria was less. Accordingly, the entire process was a septic general infection. It should not be designated according to the individual symptoms such as chills, peritonitis, endocarditis, or thrombophlebitis, but should be called sepsis with peritonitis, endocarditis, or thrombophlebitis, and the word "pyæmia" should be discarded as it leads to a false conception of the primary process.

LeLorier believes that colon infections due to the ingestion of impure milk may remain latent from infancy. Intestinal parasites which damage the intestinal mucosa provide portals of entry for the organisms into the general circulation and are responsible especially for genito-urinary and biliary complications. Pregnancy interferes mechanically with intestinal and urinary function, thereby aggravating pre-existing pathological conditions. Phlebitis and septicæmia may result from blood-stream contamination by the colon bacillus.

With the view of determining the incidence of the various anatomicopathological changes the pathology of puerperal sepsis was studied by Kvater and Rafalkes in 782 cases of sepsis following labor and 191 following abortion which came to autopsy. Deeply penetrating inflammatory changes in the myometrium were found in 9 per cent. In only 45 cases was the uterus completely intact. In 30 per cent the tubes showed inflammatory changes, and in most of these a pyosalpinx was present. Inflammation was found in the ovaries in 11.5 per cent of the cases, and parametritis in 25 per cent, the latter especially in septicopyæmia. The high incidence of parametrial affections spoke against the theory that localization in the parametrium was to be considered evidence of a favorable prognosis.

Thrombophlebitis occurred in 412 (42.24 per cent) of the cases. The distribution was as follows: in the small parametrial veins 104 times, in the pampiniform plexus, 13 times, in the uterine veins, 3 times, in the vaginal veins, twice, in the hypogastric vein, twice, in the inferior vena cava, twice, in the femoral vein, 8 times, in the right ovarian vein, 45 times, in the left ovarian vein, twice, and in both right and left ovarian veins, 19 times.

Inflammatory changes in the heart were found in 149 (15.32 per cent) of the cases reviewed. Twelve were cases of endocarditis. On culture, streptococci alone were demonstrated 67 times, staphylococci alone 16 times, and mixed infections 65 times. In the cases of endocarditis there was a marked predominance of streptococcal infections.

Diseases of the lungs and pleura were found in 157 (26.4 per cent) of the cases. The infection usually spread by way of the blood stream.

Changes in the liver were discovered in only 3 per cent of the cases. In cases of septicopyemia they consisted chiefly of parenchymatous degeneration.

The kidneys were infected in 75.23 per cent of the cases. As a rule the infection occurred by way of the blood stream. Extensive parenchymatous injuries were often observed. Of 101 cases with pus foci in the kidneys, simultaneous endocarditis occurred in only 30. Accordingly there was no direct relationship between these organic affections.

The relation between the lymphatics and thrombophlebitis was described by Homana. An interesting phenomenon reported by him was the development of edema and swelling often years after healing of the process.

In a study of the autopsy findings in 40 cases of pelvic thrombophlebitis, R. Garcia found 3 forms, one with only slight inflammatory changes in the veins and the other with macroscopic changes. In 33 cases, purulent thrombophlebitis was observed. Of the 7 other cases, lung abscesses were found in 5 and multiple pus foci in the skin and joints in 2. In a study of statistics regarding the involvement of the various veins, Garcia found that the right side was involved in 48 per cent, the left side was involved in 19 per cent, and the condition was bilateral in 33 per cent. In 50 per cent of the cases there was an associated purulent focus in the genitals or the peritoneum. Metastatic foci occurred in the lungs, skin, muscles, joints, and endocardium once in the brain, and once in the meninges.

The occurrence of pyemia following acute proctitis of the pueris in a case of abortion was reported by Cleland.

The severe forms of gonococcal infection after delivery were not common. Banasillon had a patient with polyarthritis and puerperal sepsis.

Another associated pathological finding was a subphrenic abscess which caused death on the tenth postpartum day.

It must be realized that the material presented was chiefly the findings of autopsy studies. The same pathological changes may be present in cases in which recovery occurs, especially cases with thrombophlebitic lesions. The necessity of correlating bacteriological findings, pathological findings, and clinical manifestations was being more appreciated.

CLINICAL COURSE

The onset of puerperal sepsis may occur immediately after delivery as a continuation of an

intrapartum infection or soon after delivery. Lieberthal described the clinical course of a patient whose sepsis manifested itself forty-six hours after delivery continued for a year and terminated in recovery.

The effect of puerperal infection on the blood pressure was studied by P. Garcia in the cases of 565 women with puerperal sepsis and 40 with a normal puerperium. The infection was thought to act on the cardiovascular and nervous systems and the blood-forming organs. In the women with a normal puerperium the blood pressure remained well within the normal limits. From the cases of infection, which included septicemia, septic endometritis, metritis, parametritis, salpingitis, septicemia, and pyemia, Garcia drew the following conclusions. Hypotension predominated in puerperal infections because of the dysfunction of the neurovegetative system and the dystonia of the cardiovascular system. It varied according to the stage and type of the infection. In cases of infection definitely localized in the genital tract, hypotension was the rule and hypertension the exception. When the infection and intoxication were very advanced, hypotension was constant and hypertension did not occur. When there was a more or less rapid and progressive fall in the pressure due to a general vasodilatation, the prognosis was unfavorable.

Erdemly described a metrorrhagic form of puerperal sepsis and emphasized the danger of intra-uterine manipulations. Another serious puerperal infection reported was an acute unilateral parotitis which occurred in a case in which spinal anesthesia was used and proved fatal. Garpuoy and Lefebvre were unable to explain the pathogenesis of this rare puerperal complication, especially since no inhalation anesthetic was employed.

In the course of a puerperal sepsis an erythematous eruption simulating scarlet fever may appear. Stookey and Downs believed that in the fatal form of scarlet fever developing in the puerperium the organism invaded the blood stream from the uterus, whereas in the benign form it was confined to the uterus and produced an exotoxin which caused an erythematous eruption.

Cashmore reported a case of scarlet fever in the puerperium and Downer a case of puerperal scarlet fever. In the latter there were no pharyngeal findings, but the rash and course were typical and associated with uterine findings. The Schultze-Charlton test was strongly positive. Both Cashmore's and Downer's patients recovered. Stynakova reported three cases of scarlet fever during the puerperium. In one patient the point

of entrance of the infection was the wound of a perineal laceration from which site the exanthem spread

The clinical course of endocarditis during pregnancy and the puerperium is not distinctive. The chief symptoms of the condition are tachycardia, rises in the temperature, and anæmia, all of which vary. According to Alders, the type occurring during pregnancy produced a higher morbidity and mortality than the type occurring during the puerperium. Fournier reported a case of endocarditis following septic abortion which was not readily recognized clinically.

In the course of septicopyæmias following abortions, localizations of the septic emboli may occur in any part of the body. Not uncommonly, endocarditis has arisen in this manner. Riche, Mourgue-Molines, and Lonjon described a series of multiple localizations in a patient—a phlebitis in a lower extremity, suppurative arthritis of the sacro-iliac joint, and arthritis of a shoulder and wrist joint. Localization in the sacro-iliac joint was very rare. Paucot and Gelle reported an acute coxitis secondary to puerperal infection. The patient recovered in thirty days with complete motion of the joint. Bazan also related experiences with acute coxitis.

Lemierre, Laporte, and Mohaudeau-Compoyer described the clinical course of a putrid pyopneumothorax and a bronchial fistula secondary to a septic abortion. The blood culture contained the colon bacillus.

Another rare complication of puerperal sepsis was gangrene of the extremities. McNalley reported a case of this condition and discussed the subject. Gynergen or other ergot preparations were mentioned as etiological factors, but in all of the cases but 1, fever or other evidence of infection was present. McNalley's case was the only one reported in which the condition occurred after a cesarean (Porro) section and anaerobic streptococci were isolated from metastatic abscesses.

Another case of gas bacillus puerperal sepsis was reported by Toombs. The rapidity of the clinical course of this infection was typical. Death occurred on the fourth postpartum day.

In describing the septic course following spontaneous delivery through a carcinomatous cervix, Havlasch again called attention to the inhibitive effect of infection on the growth of malignant tumors. The sepsis subsided after ten weeks. Four weeks later radium (5,200 mgm-hrs) and roentgen therapy was instituted. During the three months' wait for subsidence of the sepsis, the carcinoma did not increase in size or extent.

Although pelvic thrombophlebitis is characterized clinically by irregular and marked variations in the temperature, a constantly rapid pulse, and chills, R. Garcia observed a patient with thrombophlebitis without chills. An unusual sequence in the course of sepsis following an induced abortion was erosion of the left iliac vein by a suppurative thrombophlebitis resulting in a fatal intrapertoneal hæmorrhage (Cordes).

Bacalli described the clinical course of 2 cases of extragenital infection occurring in the puerperium. In both, there was a streptococcal arthritis of the knee which he considered to be a manifestation of a metastatic blood-borne infection.

DIAGNOSIS AND PROGNOSIS

As yet no method has been devised to determine the value of therapeutic measures in the treatment of puerperal sepsis with precision and there are no means of judging the immunological state of the infected woman. Search continues for the ability to measure the virulence of an infection and especially to determine the resistance of the patient. This knowledge is necessary for prognosis, diagnosis, and intelligent treatment. Morhardt discussed the diagnosis and prognosis of puerperal infection from these viewpoints. He stated that to acquire this information it was necessary to study the clinical course of the condition and the laboratory findings. He first classified puerperal sepsis pathologically and bacteriologically, since, on the basis of the pathological and bacteriological findings, it was possible to prognosticate to a certain extent. He stated that, as in septic endocarditis due to an aerobic streptococcus or staphylococcus the prognosis was always unfavorable. The importance of diagnosing thrombophlebitis was evident for it was known that when multiple metastases occurred and the condition continued with chills and fever, only from 10 to 20 per cent of the women recovered. Early diagnosis was necessary in order that treatment such as ligation of the veins, which was being emphasized again by Martens (Trendelenburg operation), may be carried out.

The frequency and number of chills may also be significant. Some surgeons, among them Schellenberg, have suggested ligation of the veins after the third chill. However, the mortality of conservative treatment has been 54 per cent while that following intervention has been reported as 55.1 per cent (Kauffmann), 48.5 per cent (Sigwart), and 51.6 per cent (Polak).

Schaefer considered the curve of the pulse rate also of significance. He classified 196 cases into

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tempt should be made to transfuse from a patient with blood having a high bactericidal power

The interesting relation between the febrile spontaneous and operative delivery and the subsequent puerperal course was presented statistically by Chatuncev. These data were of prognostic value. Of 256 cases of febrile labor, spontaneous delivery occurred in 70 per cent. Of 178 cases of febrile spontaneous labor, the puerperium was complicated in 62 per cent. The maternal mortality was 0.6 per cent and the infant mortality 27 per cent. In febrile spontaneous and operative deliveries in which there was no invasion during the third stage, the mortality was 0.9 per cent, whereas in those in which invasion occurred the mortality was 17.0 per cent. Manual removal of the placenta was required more frequently in febrile labors (11 per cent) than in normal labors (1.7 per cent). In operative deliveries, manual removal was done in 17 per cent, while in febrile spontaneous labor it was done in 8 per cent. Metrorrhysis was followed by poor results. Of 3 cases in which it was carried out, high fever occurred in 2 and death resulted in 1. After embryotomy, the mortality was 12.5 per cent. Therefore Chatuncev concluded that in a febrile labor with normal progress there is no indication for interference.

The change in the blood pressure has already been described in the discussion of the symptoms as a prognostic aid. Laffont and Sirjean studied the blood platelets as an aid to the diagnosis of phlebitis. In 45 pregnancies they found the average count to be 280,000 per cubic millimeter and the variation to be from 150,000 to 350,000. In the course of the condition, before the appearance of clinical signs, the count rose to 350,000 and 650,000.

According to R. Garcia, the prognosis of pelvic thrombophlebitis is very serious since, in a period of four years, the mortality due to this condition in his clinic was 68.7 per cent. During the year 1928, when an epidemic of scarlet fever occurred, there was a marked increase in the number of cases. The 2 patients treated by vein ligation died. Others were being prepared for operation but recovered without it. Three types of embolism due to thrombophlebitis were distinguished: the syncopal, the asphyxial, and the subacute. The syncopal type was alarming, an entirely well patient died suddenly after some movement. The asphyxial form was sometimes so rapidly fatal that its occurrence was not recognized before death. The subacute form of emboli was the most common. This was char-

acterized by severe side pain, dyspnoea, a rapid pulse, and cough. After from twenty-four to twenty-six hours, bloody sputum was produced. Infarction followed, and pleural processes occurred if the infarct was superficial. Small lung abscesses were more common than large ones. A septic embolus from a putrid endometritis produced lung gangrene. The prognosis of septic complications following infarction was very serious. The residuum of these complications after recovery was bronchial catarrh with cough and expectoration.

In 141 cases of thrombophlebitis, Tietze and Plaue found a mortality of 40.3 per cent. In the postpartum group the mortality was 33.3 per cent, and in the postabortal group, 50.99 per cent. Of 5 patients treated by vein ligation, only 1 recovered. The prognosis was more serious in the cases of older women. In the cases of women under twenty years of age the mortality was 27.2 per cent, whereas in those of women over thirty years it was 50.9 per cent. The mortality was higher the shorter the interval between the beginning of the pains and the onset of chills. It was increased also if the extension occurred by way of the blood stream. The later the chills began, the lower the mortality, but after the eighth day the mortality rose. In the cases of patients delivered in the clinic the mortality was 9 per cent, whereas in those of patients delivered on the outside, it was 60 per cent. In complicated deliveries the mortality was 42.0 per cent, in uncomplicated deliveries, 26.5 per cent, in spontaneous abortions, 27.2 per cent, in early abortions, 72.7 per cent, and in late abortions, 36.0 per cent. When curettage was performed in the presence of fever, the mortality was 81.2 per cent, and when chills were present before curettage, it was 100 per cent. From their experience, Tietze and Plaue concluded that conservative treatment gave good results.

Briquet discussed the clinical diagnosis and prognosis of puerperal peritonitis. Of interest was his suggestion to puncture the abdominal wall at the point of greatest tenderness and study the material obtained for its leucocyte rather than its bacterial content.

That ascariides might produce a clinical picture simulating puerperal sepsis seems far fetched. However, Procopio reported a case in which the differential diagnosis included typhoid and paratyphoid but after the passage of 2 ascariides, a vermifuge was used, and following the passage of 33 ascariides the condition subsided.

The close relation between pyelitis and puerperal sepsis warrants mention of the thorough

3 groups. Those of the first group were characterized by mild infection with subsidence at the end of 1 or 2 chills (65 cases, 32.5 per cent, with no mortality) and progressive lysis, or by remitting or continuous fever with 1 or 2 chills and a pulse just under 140 (32 cases, 11 per cent, with no mortality). In the second group, Schiefer distinguished cases running a pyemic course with a series of interval chills, a chronic course, a pulse below 120 (36 cases, 18 per cent, with a mortality of 17 per cent) cases with interval chills, a chronic course, a poor pulse (32 cases, 16 per cent, with a mortality of 78 per cent) cases with frequent chills and a subacute course (11 cases, 5.6 per cent, with a mortality of 64 per cent) and cases with frequent chills and an acute course (22 cases, 11 per cent, with a mortality of 73 per cent). The second subgroup was characterized by a septic course with moderate fever infrequent chills, and a rapid pulse (8 cases, 4 per cent, with a mortality of 100 per cent).

Studies of the blood may give information also regarding the prognosis. The leucocytes, lymphocytes, and platelets increase immediately after delivery but gradually return to normal. Schilling has studied the blood changes during puerperal sepsis and from his studies of the leucocyte and neutrophilic curves has established the following principles:

1. A moderate increase of neutrophils indicates a mild infection, while a marked increase is indicative of a marked infection.
 2. A neutrophilic leucocytosis does not necessarily indicate a mild infection with good forces of resistance.
 3. A slightly marked increase in neutrophils and a marked leucocytosis suggest a mild infection and good resistance.
 4. A rather marked increase in the neutrophils and a very definite leucocytosis indicate a severe infection with good resistance.
 5. A marked increase of neutrophils and a moderate leucocytosis indicate a severe infection with mild resistance.
 6. A marked increase of neutrophils and absence of leucocytosis show that the infection is severe and the forces of resistance are weak.
 7. An increase in the neutrophils with a decrease in the leucocytes indicates that the infection is aggravated and that the forces of resistance are diminishing.
 8. A decrease in the neutrophils and leucocytes indicates amelioration of the infection.
- Schilling considered eosinophilia a definite reaction to infection and lymphocytosis as a sign

of good resistance. From a study of the leucocyte formulae Dossowityki concluded that in cases with a primary rise in the temperature, neutrophils exceeding 90 per cent, a shift to the left, and the appearance of myelocytes, the disappearance of eosinophils and a diminution in lymphocytes indicate that the infection is not limited to the uterine cavity but is extending to the parametrium.

According to the work of Kriele on the agglutination and adherence of leucocytes and the thrombocyte count, a favorable prognosis may be given if the thrombopenia does not go below 120,000 and the sedimentation of the leucocytes is marked with adherence or agglutination. On the other hand, the prognosis must be considered grave when the thrombocytes are below 100,000 and the sedimentation of the leucocytes occurs with adherence and agglutination.

From the reports of other investigators it is evident that the Ruge-Philipp method is of some value. Thus, Litwak found an agreement between the test and clinical observations in 91 per cent of mild cases but in only 31 per cent of severe cases. In septic abortions, Sommer and Ziegler were unable to distinguish between the mild and the grave cases. The determination of the absolute and relative virulence of the streptococcus was studied by Van Damme and Daels. When the Ruge-Philipp test was positive, streptococcal infection was particularly grave.

Levy-Solal and his workers, especially Ravina, used the intradermal reaction to determine the prognosis. From the results of Erbsbacher Saxl, and others, the conclusion was drawn that a positive reaction revealed the immunological state, but was of no aid in the diagnosis or prognosis.

In 33 cases of puerperal fever in which Daels found the Ruge-Philipp test negative there was only 1 death. This death occurred very late and was due to embolism. In 47 cases in which the test was positive there were 19 deaths, a mortality of 40 per cent. Daels therefore concluded that a negative Ruge-Philipp test is reassuring and a positive test is alarming. However the test has only a relative value as it shows merely that the relationship of the virulence of the bacteria to the resistance of the blood is unfavorable. Only when the virulence of the individual strains can be determined can the bactericidal power of the blood be known. When the bactericidal power of the blood is strong, the prognosis of a positive Ruge-Philipp test is more favorable than when the bactericidal power of the blood is weak. In the cases of patients with a weak bactericidal power of the blood an at

vagina Scipades used boric acid powder or sticks in the vagina or uterus in potentially infected cases during or after delivery or abortion. By this method he has reduced his morbidity to around 13.2 per cent.

Somerville found that when an injection of 5 c.c. of a 2 per cent solution of mercurochrome in glycerine was made into the vagina, 70.5 per cent of the women never had a temperature higher than 99 degrees F, whereas of the women not so treated, only 54.4 per cent were entirely free from temperatures above that level. When he employed a 0.1 per cent solution of acriflavine instead of mercurochrome, only 60 per cent never had a temperature above 99 degrees F. In cases treated with mercurochrome there was also a decrease of 39.7 per cent, and in cases treated with acriflavine a decrease of 14 per cent, in "temperature days," as compared with control cases in which no antiseptic was employed. Somerville quoted Harris and Brown who used a 7 c.c. mixture of mercurochrome crystals, 15 gm., half strength tincture of iodine, 5 c.c., and glycerine, 500 c.c., and repeated the treatment every twelve hours if the labor was prolonged. Since Harris and Brown began the use of this mixture in 1926, the mortality has decreased from 0.261 per cent in 1,913 deliveries to 0.089 per cent in 4,494 deliveries and the morbidity has decreased from 2.05 per cent in 2,194 deliveries to 1.24 per cent in 5,385 deliveries.

Mayes developed a mercurochrome technique which consisted of spraying the external genitalia with a 4 per cent aqueous alcohol-acetone-mercurochrome solution and instilling into the vagina 3 dr. of a 4 per cent aqueous solution of mercurochrome. This treatment was repeated every twelve hours and was modified in operative deliveries. In 2,072 cases before the use of mercurochrome the morbidity was 12.4 per cent, whereas in 5,102 cases in which mercurochrome antiseptics was employed the morbidity was 5.6 per cent. The mortality was reduced from 17 deaths in 5,000 cases without the mercurochrome treatment to 4 deaths in an equal number of cases receiving the mercurochrome treatment. The mortality in caesarean sections was reduced from 7.1 per cent to 2.6 per cent. Although these statistics quite definitely indicate the favorable influence of antiseptics in the vagina, other factors such as the general improvement in obstetrical practice, skill and observance of detail in technique must also be considered. Mayes took some of these factors into account, but it is probable that if alternate cases had subjected to the technique the estimate would have been

more accurate. However, regardless of the factors mentioned, it is obvious that there has been a reduction in morbidity and mortality.

Szlapak has used serum in operative deliveries and at the beginning of puerperal sepsis with very good results.

According to Gaessler, the optimal condition for the origin of thrombo-emboli was present when the fibrinogen and globulin were increased relatively and absolutely and the blood sugar and lactic acid were increased. Therefore, as a prophylactic measure against thrombosis and embolism, Gaessler suggested that the blood sugar and lactic acid be brought down to normal. This may be accomplished by the administration of insulin.

Gheorghiu claimed that by systematic exploration of the uterine cavity after delivery he had reduced the puerperal morbidity to 3 or 4 per cent. According to Brindeau, the incidence of puerperal morbidity ranges from 20 to 30 per cent. In Gheorghiu's cases the exogenous sources of infection were prevented by a strictly aseptic delivery. The intra-uterine exploration was carried out to remove placental remains and was followed by intra-uterine irrigation with sterile water. It seems improbable that such procedures will find general acceptance.

Lorenzetti quite properly emphasized the importance in the prophylaxis of puerperal sepsis of proper treatment of any anatomical, pathological, and functional abnormalities of the genital tract which may be present before pregnancy begins. He suggested the usual hygienic measures for the patient and her attendants and described measures for asepsis during labor and the proper management of the puerperium. For cases in which pathogenic organisms were found on culture he suggested the use of lactic acid-forming bacteria in the vagina after cleansing douches. He discussed also vaccines, sera, and antiviruses.

The great problem in the treatment of puerperal sepsis is the management of the condition after it has developed. There are types which, because the constitutional immunity mechanism is poor, will never disappear no matter how perfect the technique or what prophylactic measures are developed. In a consideration of the general procedures used in puerperal infection certain facts are evident. The value of rest, improvement of drainage by Fowler's position, and supportive measures is generally recognized. The supportive measures include limitation of the diet chiefly to carbohydrates, the administration of large amounts of fluids by mouth, under the skin, or into the veins, and the use of fruit juices. Food

study of the prognosis of pyelitis by Dodds. Dodds found that the immediate prognosis of pyelitis of pregnancy and the puerperium was good. With regard to the remote prognosis he found that, of the women who had pyelitis before delivery 49 per cent were completely cured, 35 per cent developed chronic pyelitis, and 16 per cent had continued bacteriuria only whereas of those with pyelitis after delivery 60 per cent were ultimately cured completely 10 per cent developed chronic pyelitis, and 30 per cent had continued bacteriuria only.

TREATMENT

The rational treatment of puerperal sepsis has for its aim the prevention of the various etiological factors and the combating of the established infection.

Since their introduction by Semmelweis, preventive measures have accomplished more toward decreasing the maternal mortality due to puerperal sepsis than any other procedures. However although the literature shows that abortion is a factor in 40 per cent of the fatal cases of puerperal sepsis the world over only one obstetrician (Gardner) has suggested its diminution. This phase of prophylaxis may well be presented to the laity by the various propagandists and medical writers who have been dealing with subjects about which they are apparently ignorant. In the present unusual economic conditions of the world the problem of abortion becomes more acute and more evident.

The great value of prophylaxis during pregnancy labor and the puerperium has been emphasized by several writers. The prophylactic measures may be divided into general, local, aseptic, antiseptic, and biological procedures.

Cameron attempted to build up the general defense barriers by various methods. In his first or control group of puerperal patients the incidence of pyrexia was 14 per cent. In his second group, those who received Vitamins A and D in the form of adenolin, it was 5 per cent. In his third group, those who received an antitoxic streptococcal serum and adenolin, it was 1.7 per cent and in his fourth group those who received the serum alone it was 1.6 per cent. The doses and time of administration were not stated. Cameron regarded Mellanby's work with Vitamin A as being very significant and therefore employed this vitamin during pregnancy. However his own statistics do not reveal any added advantage from the use of Vitamins A and D with serum than from the use of serum alone in the prevention of pyrexia. Green's work

seemed to indicate that much of the Vitamin A taken by mouth is rapidly destroyed in the body and not stored in the liver.

LeLorier described the "colibacillosis" type of woman who since childhood, has harbored the bacillus coli in her system because of trauma to the intestinal wall, the ingestion of poor milk, and the presence of intestinal parasites. The characteristics of such women are poor general health, a grayish complexion, halitosis, poor teeth, undernourishment, neurological complaints, an atrophic condition of abdominal wall, a constant floor and a tendency to develop such diseases as appendicitis, pyelitis, cholecystitis, phlebitis, chronic metritis, and autogenous infections. To combat these possibilities during pregnancy or the puerperium, LeLorier suggested gymnastics, mild catharsis, and belladonna. The diet should be rich in albumin and poor in vegetables. Rice and sour milk are of value.

The importance of improving the general health of the pregnant woman has been already recognized in previous years. This year the value of vitamins has been emphasized. Abel again warned against vaginal examination and against coitus in the last two months of pregnancy and with Itzkin further emphasized the necessity of dental care and the clearing up of foci of infection. Citing a cross infection from a woman with a discharge to a clean puerperal one of whom died of a streptococcal peritonitis, McGill called attention to the importance of guarding puerperal from persons with infection in the throat or vagina or on the hands.

To the preventive measures already suggested, Harris added specific instructions with regard to fingering of the genitals, proper masking of the mouth and nose of the attendants in the labor room, the use of a proper aseptic technique and the limitation of vaginal examinations. As an extremely important prophylactic measure he cited the avoidance of "meddlesome" operative procedures such as routine episiotomy the routine use of forceps, routine version and extraction and the "inordinate" use of cesarean section. The value of Harris' suggestions is clearly demonstrated by the statistics on the causes of puerperal sepsis.

Grant also suggested most of the preventive measures cited and described a spray which he devised for washing the hands and instruments in home deliveries.

In addition to preparing the woman for labor by building up her general defense mechanisms by diet, vitamins, and proper hygiene, some obstetricians have attempted also to sterilize the

In a case of thrombophlebitis due to the bacillus coli which was reported by Aquino vaccine therapy was helpful. In addition to the anti-colon bacillus vaccine, trypaflavin, septicæmin, and intestinal antiseptics were used. In a gonorrhoeal sepsis with polyarthritus Bansillon obtained favorable results with a gonococcal vaccine.

Estol and Dominguez suggested the use of large doses of serum in hæmolytic streptococcal puerperal sepsis. In their cases, over 1000 c cm were injected. When time allowed, they used an autovaccine in doses of from 500 to 2,000 million bacteria. This was employed especially when serum could not be given.

Schwarcz and Zabaleta used a combination of autohæmotherapy and polyvalent vaccine and cited many severe and less severe cases of puerperal infections which showed marked improvement within forty-eight hours after the injection. The first dose was 500 million bacteria (staphylococcus aureus and albus, diplostreptococcus, bacillus coli, pneumococcus, and bacillus pyocyaneus) and 10 c cm of the patient's blood given intramuscularly. The second dose was 1,000 million bacteria and 10 c cm of blood, and the third dose, 2,000 million bacteria and 10 c cm of blood. The third dose was repeated for subsequent doses if such were necessary. The injections were given daily.

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Louros reiterated that the favorable result following the use of sepsis antitoxin (streptococcal) and glucose is due to the antitoxin, since in earlier studies he demonstrated a harmful effect of glucose on a streptococcal infection. Sera were still used in late cases (Manley), and so-called antistreptococcal types were included in the therapy of puerperal sepsis regardless of their lack of antitoxic value (Aloel and others). Thomas brought out the very important fact that sera were of value only in certain infections.

Antiseptics are continually being tried locally and intravenously. Workman wrote about rivanol lactate and reported 2 cases in which its use was followed by a favorable outcome. Rivanol with dextrose was obtained in capsules containing 0.1 gm of rivanol lactate and 0.2 gm of dextrose.

The contents of 1 capsule were dissolved in 100 c cm of distilled water and boiled for ten minutes. The solution was then injected at body temperature slowly over a period of from ten to fifteen minutes. As a rule, from 3 to 5 injections were required.

Mestitz injected intravenously an alcoholic solution consisting of 66 c cm of absolute alcohol in 200 c cm of physiological salt solution. The patients passed into a slight delirium which was followed by a deep sleep. The awakening was followed by profuse perspiration and dropping of the fever. No kidney injury was observed. Although there was a subsequent rise in the fever, further injections of the alcoholic solution had the same effect as the first. The injections were sometimes repeated as often as 7 times. Mestitz used this procedure in 20 cases. The results were poor only in the cases of 2 patients who were in a moribund condition.

Scipiades treated puerperal sepsis by the intravenous injection of an 8 per cent solution of sodium bicarbonate.

The turpentine abscess as a means of stimulating the general defense mechanism in severe sepsis was again spoken of by Dunkel and Brandis. With this method they employed immunotherapy (Warnekros' sepsis antitoxin, horse serum), foreign proteins (amnodyn, aolon, sterile milk), organic dyes (trypaflavin, argoflavin, argochrom), silver preparations (electrocollargol, disparten), quinine, salicylic acid, and neosalvarsan.

Local treatment has had for its aims the removal of infected uterine contents and the improvement of drainage. Thomas' experiences with the Hobbs intra-uterine injection of glycerin in various stages of puerperal infection demonstrated that this treatment was of value chiefly in infections limited to the uterus in which there was some mechanical obstruction to drainage. It was less applicable to postabortal infections. Elgart combined drainage with metroclisis by irrigating the uterine cavity with a 10 per cent solution of alcohol through a rubber tube in the uterine cavity. In the 79 cases in which he used this procedure the mortality was 8 per cent. A sloughing, infected fibroid in a puerperal uterus was treated by Ramsay with 3 per cent formalin in 2 oz of glycerin through an intra-uterine rubber tube for six weeks. The patient recovered and the function of the uterine cavity was restored. When next seen, the woman was in the seventh month of pregnancy. Théodoridès suggested the use of zinc chloride for irrigation in solutions not over 2 per cent, especially for suppurating wounds. However, Cammaert prefers the con-

accessories such as Vitamin A have been suggested to raise the bodily resistance. Thomas followed the dicta of Mellanby and Green, who advocated the use of Vitamin A, in the treatment of 86 women with puerperal sepsis. In the locally limited infections, the febrile temperatures persisted, pelvic infections spread, and toxemia was quite unaffected in spite of continued and adequate dosage. In the cases of septicemic patients, the Vitamin A as a bactericidal agent in the blood was practically valueless. Of 18 patients with septicemia, only 1 recovered and in both of these the illness was of several months' duration so that recovery could quite justifiably be ascribed to the patients' own antibacterial powers. Clowald and coworkers were favorably impressed by the effect of Vitamin A in 5 cases, but this number is too small to warrant conclusions. Green studied the Vitamin A content of the liver in puerperal sepsis. He reported that a large proportion of the vitamin taken by mouth could not be found in the liver and was apparently rapidly destroyed in the body. In several cases the reserves of Vitamin A were low in spite of intensive treatment. In such cases septic thrombophlebitis was a frequent complication. It was suggested that in degenerated conditions of the liver the liver cell is unable to retain the vitamin. Green quoted the findings of Green, Davis, Pinder and Mellanby which suggested that, although the liver may not be devoid of Vitamin A, the administration of extra amounts of this vitamin may increase resistance to infection. Wolff found that the Vitamin A content of the blood is very low in puerperal women. This observation supports the hypothesis that a certain concentration of the vitamin in the liver is necessary before the blood can take up optimal amounts of Vitamin A. A low concentration in the blood may cause weakening of some defensive mechanism against infection. These studies of the effect of the vitamin on puerperal sepsis may throw light on the relation of the vitamin to the mechanism of immunity. Other studies have also shown Vitamin A to be of value in increasing immunity.

The biological agents utilized to combat infection are sera, vaccines, whole normal blood, and immunized blood.

Stimulated by reports of the favorable effect of bacteriophage in surgical infections, Laffont and Ezes used a mixed bacteriophage from the d'Herelle laboratory. Of a fairly large number they studied 43 patients carefully. They injected from 1 to 2 c.cm. of the bacteriophage intravenously every third day. In some patients

the injection was followed by a reaction. However recovery following bacteriophage treatment occurred rapidly with a drop in the temperature and a return to normal in two or three days.

The use of blood transfusions has been generally accepted as a supportive measure in all types of puerperal sepsis (Maul and others). Trettenner reviewed the literature and related his own experiences with blood transfusions in puerperal sepsis. He believes that the effect of the blood is an immunizing and hormonal irritation. He reported 15 cases, but presented no facts to support his views. Pfals found blood transfusion of benefit in gas bacillus infections of the uterus.

The value of immunotransfusions is being emphasized again by the French. The actively immunized donor may be either a woman convalescing from puerperal sepsis or an individual immunized with bacteria over a period of time. Many difficulties are encountered in obtaining the convalescent blood or serum. Lemeland reported a case of puerperal sepsis which did not respond to uterovaginal tamponade of fibrin, to a fixation abscess, to syphilol, or to resorcin. The blood culture being found still negative on the thirteenth and fifteenth postpartum days, a transfusion of 200 c.cm. of blood from a convalescing patient was given. Another such transfusion (from another patient) was given on the eighteenth day. Recovery followed, although a breast abscess developed and required incision.

Experiences with the use of blood from prepared donors in the treatment of puerperal sepsis have been reported by several obstetricians. Dabace reported his results in 54 cases in which 103 transfusions were given. Twenty-eight of the patients recovered and 26 died. Many of the patients in the series were moribund. The donors were inoculated intradermally every fifteen days with a stock vaccine consisting of dead bacteria, the lyante and the anatoxin of the organisms. From 150 to 200 c.cm. of blood were given and repeated on the basis of the clinical observations. Dabace cautioned against the use of other intravenous therapy between transfusions. The transfusions should not be given too late. Other reports on the use of blood from prepared donors have been published by Levy-Solal and Frenay and by LeLorier, Dabace, and Mayer. The latter group used also the fixation abscess. One or more transfusions brought about improvement in the character of the pulse, a drop in temperature, cessation of the chills, and improvement of the general state.

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servative method of treatment because all of his patients died after such active treatment as intra-uterine douching.

Local vaccination of the uterine cavity has been studied by Montague (infiltration method) and by Manz (injection). Manz injected a stock vaccine of streptococci, staphylococci, gonococci, and colon bacilli into the submucosa of the uterine wall. In the majority of cases the temperature curve showed a short, intense rise and then a drop in from one half to one hour. As a rule the fever ceased and the pain subsided after 2 or 3 injections of the vaccine, but in some cases as many as 5 injections were given.

The literature on surgical therapy shows that there are still adherents of vein ligation in puerperal sepsis (Hucke, Scheffenberg, and Tagliaferro). Laffont and Ezer reported a case of suppurative pelvic thrombophlebitis due to pneumococcal infection which was treated by ligation of the vena cava and utero-ovarian pedicles. Orlichest, Hamant, and Vermelin reported a recovery following ligation of the left hypogastric vein.

Fels, Derickscheller Sommer and Rust discussed the merits of vein ligation in puerperal pyemia. The choice between an extraperitoneal and a transperitoneal approach to the veins seemed to be of less importance than the determination of the proper time for operation. According to Rust, there was no reason for substituting the operative procedure with a recovery incidence of 50 per cent for the conservative procedure with a spontaneous recovery incidence of 70 per cent.

Hysterectomy has its indications in puerperal sepsis. According to Latako, they are the retention of large or small parts of the placenta when the patient remains in a serious condition in spite of the usual methods of treatment, necrosis of a fibroid during the puerperium, localized giant phlebitis and lymphangitis and thrombosis of the ovarian veins associated with endometritis or periphlebitis. Latako does not consider bacteremia or metastases as contra-indications. Lemchand reported a case of puerperal sepsis and retained placenta in which hysterectomy was followed by recovery and Michel, Rousseaux, and Bertrand reported a case of gangrenous endometritis with a retained dead fetus in which this operation was followed by death. It is evident that it is difficult to determine the type of infection and the time at which hysterectomy may be practiced. Mahon reported a case of puerperal peritonitis in which he performed hysterectomy forty-eight hours after delivery and used a Milk-

lex drain. The patient recovered. Mahon emphasized that if the operation is to be of value it must not be done too late. Sackett's report demonstrated the importance of delaying operation until the local tissues are immunized.

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ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

Isola, A. Pathological Synostoses of the Skull and Face (La sinostosi patologiche della volta e del cranio facciale) *Radiol med*, 1932, **xx**, 1382

The author states that in a skull with premature synostosis there tends to be a compensatory hypertrophy along the axis of the affected suture with limitation of development perpendicular to the suture. The compensatory hypertrophy parallel with the suture is the primary anomaly while other deformities are secondary. In the face it is hard to determine just which changes are primary and which are secondary as the face is not a simple curved surface like the skull but a complex structure with various arches and plane surfaces in which the lines of force are lost.

Pathological synostoses of the skull produce various types of skull such as the oxycephalic, acrocephalic, scaphocephalic, platycephalic, and plagiocephalic. The results of pathological synostoses of the bones of the face in intra-uterine life are seen in Crouzon's disease or hereditary craniofacial dysostosis and in a similar condition associated with chronic hydrocephalus.

The author believes that the exophthalmos seen in anomalies of the skull is due chiefly to aplasia of the orbital part of the frontal bone and only to a negligible degree to lordosis of the base. He is of this opinion because he has seen a case of slight oxycephaly with serious lordosis of the base without exophthalmos and cases of oxycephaly and acrocephaly with exophthalmos without lordosis of the base. He believes that the exophthalmos in anomalies of the face is caused by changes in development of the bones forming the cavity of the orbit which are brought about by pathological synostoses of the middle tract of the sphenofrontal suture and probably of other sutures of the face. He thinks that the increased distance between the eyes and divergence of the axes of the orbital cavities which, together with reduction in the depth of the orbit itself, bring about exaggerated exophthalmos and divergent strabismus, are caused by an ethmoid with the shape of a truncated cone with the larger base forward. This is due to pathological synostosis of the sphenofrontal suture and the compensatory force which tends to exaggerate this effect.

None of the factors proposed heretofore to explain premature synostosis of the sutures pathologically, such as infection, trauma, hereditary disease, and amniotic changes, is found in more than a limited number of cases. The author believes that

the fundamental cause is an endocrine disequilibrium, probably of the thyroid, and that the other causes mentioned are only exciting factors.

AUDREY GOSS MORGAN, M D

Pyrab, L. N. Chronic Parotitis, A Report of Four Cases, with Sialograms *Brit J Surg*, 1933, **xx**, 508

The author reports four cases of chronic parotitis in which a roentgenographic study was made after the injection of lipiodol into Stenson's duct.

The infection was non-specific. In three cases it was due to infective foci in the mouth—chronic stomatitis, infected tonsils, and infected teeth—and in one case was blood-borne. In one case there was a definite obstruction near the orifice of the duct, and in another a marked dilatation of the terminal ducts. In none were calculi found.

In all four cases the condition had an acute or subacute onset, but in none did it proceed to the stage of suppuration. During the acute stage the gland was hot, swollen, and painful. In one case there were repeated subacute exacerbations. During the chronic phase there was little or no discomfort. Pus was discharged from Stenson's duct.

Rational management of such cases consists in treatment or removal of foci of infection in the mouth, measures to promote secretion from the gland, and irrigation of the ducts with a mild, non-irritating antiseptic. Drainage may be established by gentle massage. The flow of saliva can be increased by acid drinks. The ducts may be dilated by filiform bougies. In two of the cases reported the repeated instillation of from $\frac{3}{4}$ to 1 c.cm of lipiodol into Stenson's duct proved successful.

NORMAN C. BULLOCK, M D

EYE

Naffziger, H. C. Pathological Changes in the Orbit in Progressive Exophthalmos, with Special Reference to Alterations in the Extra-Ocular Muscles and the Optic Disks *Arch Ophth*, 1933, **ix**, 1

Progressive exophthalmos following thyroidectomy which relieved all other signs of hyperthyroidism is not extremely rare. Frequently it has necessitated enucleation because of exposure and infection. Naffziger has operated six times for this condition, removing the roof of the orbit and of the optic foramen through an intracranial approach. There were no fatalities. The exophthalmos was reduced or eliminated, and visual improvement

of varying degree was noted. The indications for the operation were progressive exophthalmos, limitation of movement of the ocular muscles, and increasing loss of vision.

The exophthalmos was due to an enormous increase in the size of the extra-ocular muscles. These muscles showed an increased water content, lymphocytic infiltration, fibrosis, and hyaline degeneration. The optic nerve also softens. Papillitis, hemorrhages about the nerve, and optic atrophy have been observed.

KAROL A. DODD, M.D.

Pillat, A.: The Production of Pigment in the Conjunctiva in Night Blindness, Pterosis, Xerosis, and Keratomalacia of Adults. *Arch. Ophthalmol.* 1933, 12, 28.

The author discusses from the clinical and pathological standpoints the production, appearance and distribution of pigment in the conjunctiva in night blindness, pterosis, xerosis, and keratomalacia in adults and reviews the theories regarding the changes. The article is summarized as follows:

The intensity of pigmentation varies greatly in different cases and at the different zones of the conjunctiva. It is most marked in the lower fornix, first in the circular fold, then in the plica, the conjunctiva of the lower half of the bulbus, the lower lid, the upper half of the bulbus, and finally the upper fornix and upper lid.

On histologic examination, the conjunctival fissure shows a varying amount of pigment, usually corresponding to the stage of Vitamin A deficiency. In each case the pigment production depends more on the duration of Vitamin A deficiency than on the stage of the disease.

The entire pigment is produced in the epithelium of the conjunctival cells. There are two types of pigment-producing cells, the dendritic cells or melanoblasts, which are found chiefly in the basal-cell layer and sometimes in the next higher layer and the ordinary epithelial cells, especially the middle layers which produce pigment in the form of caps at the distal pole of the nucleus or which increase a pre-existing nuclear cap.

The dendritic cells appear first in Vitamin A deficiency and later the pigment caps in the other epithelial cells are formed. In advanced cases of long duration, almost every epithelial cell contains a considerable amount of pigment.

The conjunctival hyperpigmentation, which is formed because of Vitamin A deficiency disappears gradually along with the healing of the other clinical symptoms by the administration of cod liver oil, but the pigmentation is the last symptom to disappear.

The main purpose of pigmentation in Vitamin A deficiency is to protect the epithelial cells of the conjunctiva, which are greatly altered and weak cod in their metabolism, from being injured by sun and daylight. The conjunctival epithelium is thus changed to a "pigment epithelial layer" so to speak, giving some protection also to the retina, the normal

function of which is already altered (night blindness)." THOMAS D. ARRY, M.D.

Doggart, J. H.: Superficial Punctate Keratitis. *Brit. J. Ophthalmol.* 1933, xvii, 65.

"Superficial punctate keratitis is a morphological conception. The term is applicable to any corneal affection with opaque dots involving the epithelium, Bowman's membrane, or the superficial layers of the substantia propria. The author states that only confusion can arise from an attempt to limit the term to a single disease. It should be applied to a group of conditions which may differ widely in their cause, duration, and clinical signs. Doggart classifies his cases into the following three groups:

1. Non recurrent superficial keratitis, in which the main lesions are situated in the anterior layers of the substantia propria.

2. Multiple epithelial erosions, with or without involvement of the substantia propria.

3. Miscellaneous conditions in which multiple superficial lesions of the cornea are a prominent feature.

LESLIE L. MCCOY, M.D.

McKeown, H. B.: Detachment of the Retina. The Goulet Operation and a Report of Cases. *Arch. Ophthalmol.* 1933, 12, 64.

Gonin, Vogt, and a few others have claimed a cure in approximately 50 per cent of cases of detachment of the retina treated by Gonin's lymphuncture, but most surgeons have been less successful with this procedure. Inquiries made of twenty American ophthalmologists and three European clinics revealed the combined incidence of cure and improvement after the Gonin operation to be no higher than from 10 to 25 per cent.

The author favors the Goulet operation. Of twelve cases in which this method was used, it resulted in a cure in six, improvement in 3, and failure in three. A sufficient number of trephine holes must be made, and there must be sufficient treatment with potassium hydroxide. In the cases reported, the number of trephine holes ranged from five to eighteen. If too much cauterizing is done the inflammatory reaction will result in failure of the operation. In order to prevent hemorrhage into the vitreous, the perforation of the trephine holes should be done with a blunt-pointed probe rather than with a sharp-pointed knife. The avoidance of corneal injury with consequent edema requires careful use of the potassium hydroxide and the neutralizing acetic acid.

The author believes that the Goulet method gives better results than the Gonin method because it permits the treatment of a larger area. In most cases there seems to be a wide area of retinoclinal separation.

WILLIAM A. MANN, JR., M.D.

Baphtz, O.: Changes of the Optic Nerve Resulting from the Pressure of Arteriosclerotic Internal Carotid Arteries. *Am. J. Ophthalmol.* 1933, xvi, 6.

This is a report of the pathological findings in six cases in which non-syphilitic arteriosclerotic

changes in the internal carotid artery caused gross and microscopic changes in the optic nerve. In four cases there was an aneurism of the artery. The microscopic changes in the nerves were less marked than would be expected from the gross appearance. Only occasionally was a slight perivascular lymphocytic infiltration found. The central bundles were injured by the pressure more than the peripheral bundles. No nutritional disturbances were noted.

The author reviews the literature on the subject. In conclusion he says that it is unlikely that visual disturbances in old persons can often be explained by lesions in the optic nerves resulting from the pressure of arteriosclerotic internal carotid arteries.

THOMAS D ALLEN, M D

MOUTH

Denehy, W J, and Amies, A. The Treatment of Adherent and Deficient Palates. *Med J Australia*, 1933, 1, 150

The adherent and deficient palate is due to disease or trauma. The trauma is usually operative. The distress occasioned by even minor degrees of palate deficiency may approximate that caused by total atresia. It includes a nasal voice, retention of nasal discharge, and pansinusitis.

Tonsillectomy or adenoidectomy may be an etiological factor. Dangerous sequelæ result from (1) anatomical and pathological states such as the presence of a lingual tonsil and scarring from a peritonsillar abscess, (2) anæsthetic complications, (3) surgical complications due usually to adhesions of the tonsil or capsule to the faucial pillars or palate and an abnormal amount of hæmorrhage, and (4) poor technique.

The chief purpose of adenoidectomy is re-establishment of a free airway from the posterior nares through the nasopharynx. Too free use of the curette does not help in attaining this aim and may result in a great deal of eustachian canal difficulty with consequent otitis media.

The various methods employed singly or together in the operative treatment of this condition are

1. Simple division of adhesions of the palate from the dorsolateral pharyngeal wall
2. Simple looping forward of the soft palate with suture after division of adhesions. This may cause the posterior faucial pillars to remain in the forward position long enough to prevent re-adhesion.
3. The insertion of tubes from the nose to the mouth after careful division of the adhesions. The tubes must be kept in place for a number of weeks. This method is not always successful.
4. The Brophy technique of dividing adhesions and keeping the raw surfaces separated by means of a rubber plate. This method causes difficulty in swallowing, irritation from the foreign body, a nasal voice, and a tendency toward otitis media or pansinusitis.
5. The use of a fixed palatal splint after division of adhesions. Such a splint is constructed to cover

the upper teeth. To a cross-bar in the molar region two stout German silver wires are soldered, one on each side. A pad of soft vulcanized rubber is vulcanized to each of these and the pads are adjusted so that they pass upward lateral to the uvula into the lower nasopharynx and do not interfere with the movement of the uvula or the medial part of the soft palate. The splint is cemented into place on the teeth. Although this method necessitates general anesthesia for removal of the splint, it has advantages as it does not produce as much dysphagia as the other procedures, it permits nasal breathing, it usually does not cause gross rhinitis, and it allows practically normal speech. WILLIAM G HAMM, M D

NECK

Pearse, H E Jr. The Operation for Perforations of the Cervical Oesophagus. *Surg., Gynec & Obst*, 1933, 167, 192

Perforations of the cervical oesophagus frequently result in a fatal spread of the infection to the mediastinum. This may usually be prevented by early operation. The original procedure of Marschik for this purpose has been modified by a low cervical exposure obtained by mobilization of the thyroid gland and blocking of the fascial space behind the oesophagus.

SAMUEL KAHN, M D

Chase, W H. Familial and Bilateral Tumors of the Carotid Body. *J Path & Bacteriol*, 1933, xxxv, 1

The author reports the occurrence of benign carotid body neoplasms in two sisters. In one of the patients the tumors were bilateral, developed almost simultaneously on both sides, and were so intimately connected with the bifurcation of the common carotid arteries that, in their removal, ligation of both common carotids as well as of the internal and external carotids was necessary. The largest of the three tumors measured about 6 by 3 by 2 cm.

The evidence indicates that the carotid bodies are essentially parasympathetic in nature, being made up of cells similar to those of the medulla of the adrenal. Any tumor arising from this tissue contains a variable mixture of more or less immature forms of (1) ganglion cells (sympathogonia cells) and (2) pheochromic cells in various stages of development.

The author's study indicates that the tumors in his patients are appropriately designated as "paraganglioma caroticum." The histochemical tests for adrenalin were negative. In the only specimen preserved in fluid suitable for this reaction, chromaffin-like material was found. Medullated and non-medullated nerves were also demonstrated.

The tumors are regarded as benign neoplasms because of their perfect encapsulation and because of the manner of growth and the polymorphism of both the pheochromic and the sympathogonia cells. They may even be regarded as a neoplastic transformation of hyperplasia because in one of the cases they occurred bilaterally without metastases and

because in their histological structure they resembled the normal carotid body. In the adrenal cortex such bilateral hyperplasias are not uncommon.

MAURICE P. MINNICK, M.D.

Rosenblum, H. H., and Levine, S. A.: What Happens Eventually to Patients with Hyperthyroidism and Significant Heart Disease Following Subtotal Thyroidectomy? *Am. J. M. Sc.*, 933, cxcv: 39.

This article is based on a study of sixty nine cases of hyperthyroidism with gross disturbance of the cardiovascular apparatus. In all, subtotal thyroidectomy was done. The authors believe that metabolism readings found repeatedly in the neighborhood of +20 and +30 in the case of a patient with heart disease are suggestive of an underlying hyperthyroidism.

In the cases reviewed there were two post operative deaths. The average length of time that had elapsed since the operation when the patients were followed up was from four to five years. Six of the patients who had died since the operation had had normal health or had been able to resume moderate activity in the interval. Their average survival was two and a half years. After the operation the average blood pressure was a few millimeters higher than before the operation. The size of the heart was practically unchanged. Of twenty-four patients with auricular fibrillation who were adequately studied, eleven had mitral stenosis. In none of these did the rhythm change spontane-

ously. Of the remaining thirteen, the rhythm became normal after the operation and remained normal for years in six. In eleven, there was a paroxysmal auricular fibrillation. In practically all instances the paroxysms ceased before the patient left the hospital.

The authors' experience with quinidine indicates that, before operation, this drug is useless for auricular fibrillation, and after operation it is dangerous in cases of mitral stenosis. It is best given a few weeks after operation to patients without mitral stenosis in whom auricular fibrillation is still persisting.

The great rarity of congestive heart failure in young persons with hyperthyroidism and the almost constant presence of other forms of heart disease in patients with significant cardiac embarrassment makes it probable that hyperthyroidism is rarely the sole cause of heart failure.

In the cases reviewed, operation was followed by marked improvement in the various evidences of circulatory embarrassment such as congestive heart failure, angina pectoris, and disturbing irregularities of the heart, and this improvement was extremely well maintained.

In conclusion the authors say that the occurrence of striking improvement following subtotal thyroidectomy in a patient with advanced congestive heart failure, in whom the thyroid was normal, suggests that this operation may be of value more generally in the treatment of various forms of cardiac disease.

PAUL STARR, M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Gardner, W J, and Nichols, B H Encephalography in Surgical Lesions of the Brain A Report of Fifty Consecutive Cases *Am J Cancer*, 1933, LVII, 342

In contrast to Dandy, the authors do not believe that markedly increased intracranial pressure as indicated by papilloedema and increased spinal fluid pressure constitutes a contra-indication to encephalography by the spinal route. In a series of fifty consecutive cases there was only one untoward result. This was respiratory embarrassment in a case of obstructive hydrocephalus and was promptly relieved by the introduction of a cannula into the lateral ventricle. However, the authors warn that the surgeon must be prepared to do an immediate craniotomy as soon as the wet plates are interpreted.

In the authors' technique the patient is given a hypodermic injection of codein and scopolamine followed by a rectal injection of 100 mgm of avertin per kilogram of body weight. Fifteen minutes later he is placed in the encephalogram chair which is mounted on wheels. A lumbar puncture needle is introduced and to this a 10-cm syringe is attached by means of a two-way petcock. An innovation suggested by the authors is the attachment of a manometer by means of a second two-way petcock. A preliminary spinal pressure reading having been made, 10 c.cm. of air are introduced into the spinal canal before any fluid is withdrawn. The fluid is removed in amounts of 5 c.cm. and air is substituted until no more fluid can be obtained. The spinal pressure is never allowed to fall below the initial reading. Roentgenograms are then made, and if choking is present the operation is carried out as soon as they can be interpreted.

This procedure was of definite diagnostic or localizing value in an unusually large proportion of cases. In only seven cases was it considered of no value. These included three cases of cerebral hemisphere tumor, one case of small acoustic nerve tumor, one case of cerebral abscess, one case of cerebellar abscess, and one case of aneurism of the basilar artery.

JOHN W EPTON, M D

Allen, S S, and Lovell, H W Cysticercus of the Brain *Ann Surg*, 1933, xcvi, 1

The authors report two cases of cysticercus infection of the brain. In one case a large cyst in the posterior part of the third ventricle caused obstruction of the aqueduct of Sylvius and internal hydrocephalus. Despite marked dilatation of the ventricles, symptoms were present for only three days. The patient died before the lesion could be localized.

In the other case there were symptoms indicative of a tumor in the left frontoparietal region. At operation the brain was found to be markedly congested and felt quite firm and hard. It had the appearance and feel of gliosis rather than the softening which is usually associated with brain tumor. Several hard, shot-like bodies were found in the region of the post-central gyrus and throughout the cortex. When some of them were removed they were found to be cysticercus cysts. A large subtemporal decompression gave considerable immediate relief. The patient continued to show improvement up to the time of her discharge from the hospital and because of the relief of her acute symptoms it was believed that the improvement would continue.

These cases represent the two most common forms of cysticercus infection of the brain.

JOHN W EPTON, M D

Olivcrona, H Gliomata of the Cerebral Hemispheres (Die Glome der Grosshirnhemisphaeren) *Deutsche Ztschr f Nervenhe*, 1932, cxxviii, 1

The glioma is the most common brain tumor. Olivcrona saw 181 gliomata, 118 of which were in the cerebrum and 63 in the posterior cranial fossa. Of the 118 cerebral gliomata, 85 were situated in the hemispheres and most of the others in the third ventricle or the basal ganglia. In the cerebral hemispheres the most common site of such tumors is in the neighborhood of the central furrow, particularly the Sylvian fissure, and the next most common site, the ventricular system. The frontal and occipital lobes are seldom involved and, in contrast to cases of meningioma, the contacting cerebral hemispheres are involved only exceptionally. On the basis of the clinical course, Olivcrona distinguishes malignant gliomata and benign gliomata. These occur with about equal frequency. Pathologico-anatomically, solid tumor nodules, sometimes with cystic dilatations, and cysts with or without intramural glioma nodules are found in both groups. Infiltration is characteristic of both groups.

The malignant gliomata are found most often between the ages of forty and sixty years. As a rule the disease begins insidiously, but a sudden or even apoplectic onset with severe symptoms is not exceptional. Psychic symptoms are present early and after a short time are usually very marked. The contrast between the mental changes and the duration and intensity of the general symptoms of brain pressure may be very striking. In the stage at which surgical aid is sought, papilloedema is usually present, but in most cases it is not particularly marked when considered with regard to the patient's general condition. In some cases it may be absent and in others may be manifested only by a slight

blurring of the margins of the disks. The patient rarely becomes blind. Roentgen changes in the skull are absent in most cases and are never marked. When local symptoms are present, they are usually extensive and point to a large focus. All the symptoms develop very speedily and the disease progresses at a rapid rate. The condition is always fatal. Death usually occurs within six or eight months.

In contrast to the malignant form, the benign glioma occurs more often in young persons and the history usually extends over a longer period. Papilloedema is usually present and blindness is not rare. Psychic changes of slight degree are often present, but except in cases with a frontal localization of the tumor they are never so intense as those caused by malignant gliomata. Pronounced mental symptoms develop late. Epileptic attacks, sometimes of the Jacksonian type, are common.

Malignant gliomata must be distinguished from metastatic brain tumors, brain conditions of vascular origin, epidemic encephalitis, brain abscesses, chronic hematoma, and benign brain tumors, chiefly gliomata and meningiomata. Ventricleography is important in the differential diagnosis. Malignant gliomata of the cerebrum give rise with great regularity to marked dilatation of the contralateral lateral ventricle and usually also of the non-compressed portions of the homolateral ventricle. Deformation of the contralateral ventricle is relatively rare. Meningiomata are characterized by the fact that with the often very marked displacement and particularly the deformation of the ventricular system the dilatation of the ventricles is slight. From the ventriculographic standpoint, benign gliomata occupy a middle position between malignant gliomata and meningiomata. If the case has a long history there may be considerable dilatation of the lateral ventricles. When the history is short the dilatation is almost always slight, but usually greater than in cases of meningioma. The deformation of the homolateral ventricle is often marked. With regard to other changes in the roentgen picture the author says that bone changes due to increased intracranial pressure are considerably more frequent and pronounced in cases of benign than in cases of malignant gliomata and meningiomata, craniotomies of bone occur chiefly in association with meningiomata, and increased vascularization of the bone is found only in the presence of meningiomata.

Among the clinical signs of aid in the differential diagnosis is the length of the history of illness, a long history almost excluding malignant glioma. When the history is short, absence of mental disturbances suggests that the tumor is benign. In cases of malignant glioma pronounced epileptic attacks are rare.

Malignant glioma is a hopeless condition as there is no cure. Roentgen irradiations fail to help. Operation may prolong life to a certain extent and relieve distressing symptoms, such as headache and vomit-

ing, for a time, but has never rendered the patient able to work again. If operation is done the tumor should be removed at least in part. The intervention should not be limited to decompression as this is not well borne by the patient. Of 13 patients whose tumors were removed, 3 (23 per cent) died, whereas of 17 patients who were treated only by decompression, 11 (64.7 per cent) died. Radical removal of the tumor is impossible. The dura should be left open and the bone over the trephination opening should be removed.

In cases of benign glioma, surgical treatment is not a worthless task. Fifty per cent of the patients operated upon were able to return to work for a longer or shorter time. Twenty-five per cent lived for two years or longer but their working capacity was limited because of the defects. Fifteen per cent died soon after the operation and 10 per cent died from recurrence within a year. At operation for a benign glioma the attempt should be made to remove the tumor radically. Occasionally the resection of large portions of the brain may be necessary. The resection should be limited according to the importance of the parts of the brain and the vessels involved. Ligation of the middle cerebral artery is fatal. Werns (2)

Lysholm, E., and Olsson, H.: Changes in the Optic Canals in Cases of Intracranial Tumor. *Acta Otolaryng. Scand.*, 1924, 1925, 1927

The authors describe changes occurring in the optic canals in cases of glioma of the optic chiasm, suprasellar cholesteatomas, and pituitary adenoma. In glioma of the chiasm and suprasellar cholesteatomas they consist of widening of one or both optic canals and of the sulcus chiasmaticus, the sella remaining essentially normal. In pituitary adenoma, destruction of the walls of the optic canals and of the sella and clivus were observed.

Davis, L., and Cutler, M.: An Experimental and Clinical Study of the Use of Radium in the Brain. *Surg. Gynec. & Obst.*, 1923, 191, 240

Following a review of the use of radium in the brain the authors report experiments which they carried out to determine the effect of the application of removable radium needles upon the normal brain tissue of animals under conditions in which the γ radiation was delivered according to the modern concepts of adequate filtration, prolonged exposure, and homogeneous distribution.

The experimental animals were cats, dogs, and a monkey. *Platinum iridium* needles 33 mm. long, with walls 0.5 mm. thick, and containing 1 mgm. of radium element were used. With two exceptions the needles were implanted in the parietal area of the cerebral hemisphere. In 10 cats the implantations were made into the cerebellar hemisphere. In one series of experiments one needle containing 1 mgm. of radium was implanted for twenty-four forty-eight, seventy-two, ninety-six, one hundred and twenty and two hundred and sixteen hours before

the animal was sacrificed. In another series, 4 mgm of radium were implanted for periods of from forty-eight to two hundred and sixteen hours, a total of from 192 to 864 mgm-hrs being given. The animals were sacrificed at intervals of from twenty to one hundred and sixty-eight days after removal of the radium.

It was found that the animals would tolerate a larger number of radium needles if a small amount of bone was removed and the dura mater was left open over the site of the implantations. The needles were introduced into the brain at intervals of 1 cm about the circumference of a circle. None of the animals, regardless of the number of milligram hours of exposure and the time of sacrifice, showed any symptoms of damage to the central nervous system.

On microscopic examination the pathological changes were found to consist of a central zone of destruction immediately in the tract of the needle wound. In the brains of the animals killed at the end of the period of exposure, gutter cells loaded with fat, thickening of the blood-vessel endothelium, thrombosis of smaller blood vessels, amyelinization, and slight chromatolytic changes in the nerve cells were the prominent features. In the experiments in which some reparative process had time to occur the gutter cells had disappeared, astrocytes and oligodendroglia cells were found in large numbers, and neuronophagia was present. Attention is called to the fact that all of the pathological changes gradually faded away to the normal within the radius of a centimeter from the central zone of destruction.

The authors conclude that radium element in multiple weak foci adequately filtered and uniformly distributed over a period of from one hundred and twenty to one hundred and sixty-eight hours produces no destruction of normal brain tissue.

In the case of a fourteen-year-old boy with an extensive glioblastoma in the temporal lobe they introduced into the tumor mass eight 2-mgm radium needles at intervals of about 1 cm. The radium was removed after an exposure of 2,688 mgm-hrs. The patient recovered from the operation, but died within two months after an acute decline.

The authors conclude that it is surgically practicable to implant radium needles in a brain tumor and remove them after the period of irradiation.

ROBERT ZOLLINGER, M.D.

Russel, C. K. Spontaneous Subarachnoid Hemorrhage. *Canadian M. Ass. J.*, 1933, xxviii, 133.

Russel reports twenty-six cases of spontaneous subarachnoid hemorrhage. He calls attention to the differences between the subarachnoid hemorrhage following trauma and that occurring spontaneously. The latter is most common at about the thirty-eighth year of age and occurs more frequently in females than in males. In some cases pregnancy or an infectious process is present, but in others no etiological factor except perhaps unusual exertion or, in the cases of older patients, arteriosclerosis, can be determined. Sometimes the condition can be

explained only by congenital weakness of the muscularis of the arterial walls, especially at the branching of the vessels.

The symptoms consist of the sudden onset of severe headache usually with vomiting, coma or semi-coma, marked restlessness, stiffness of the neck, and often a positive Kernig sign and blurring of the optic disks. The urine frequently shows albumin and casts and occasionally contains sugar. The spinal fluid is bloody and does not coagulate. After the cells have settled the supernatant fluid is colored by blood pigment. Frequently the condition runs its course with only the signs of meningeal irritation. Often these become complicated by evidences of hemiplegia. Again the hemiplegia may dominate the picture. Under such circumstances the condition is due to the rupture of an aneurism, usually at the junction of one of the anterior cerebral arteries with the anterior communicating arteries. The force of the hemorrhage evidently tears into the opposite frontal lobe, with resulting localizing signs.

LEO M. DAVIDOFF, M.D.

Duel, A. B. The History and Development of the Surgical Treatment of Facial Palsy. *Surg. Gynec. & Obst.*, 1933, lvi, 382.

The author discusses the various methods which have been proposed for the surgical treatment of facial palsy. He carried out a series of experiments on monkeys in which autoplasmic nerve grafts were used to restore function to the injured facial nerve. The results were better when the graft was divided and degeneration was allowed to take place for from ten to thirty-five days with the blood supply of the graft intact before the graft was transferred. By the end of that time the graft consisted of a bundle of tubes similar to the distal end of the facial nerve and ready to act as a conveyor of axons. Duel believes that the anterior femoral cutaneous nerve is the best for grafting. In his experiments in which prepared grafts were used muscular responses were obtained in from a quarter to half the length of time that was required to obtain similar responses in the control experiments in which fresh grafts were employed.

ROBERT ZOLLINGER, M.D.

SPINAL CORD AND ITS COVERINGS

Harmeier, J. W. The Normal Histology of the Intradural Filum Terminale. *Arch. Neurol. & Psychiat.*, 1933, xxxi, 308.

The study herewith reported was made on material collected at autopsy. The specimens were removed intra-abdominally. The dural sac was opened and the filum terminale internum identified by its bluish-white glistening appearance and its accompanying vessels which were usually distended with blood.

In the longitudinal sections large collections of ependymal cells were seen. In some places they were without definite arrangement, but in others they lined small irregular cavities. The ependymal

cells lining the cavities were frequently dilated. Beneath the pia mater but also collected in masses and scattered throughout the tissue, were excessive numbers of corpora amylacea.

Axial cylinders extended all the way down the filum terminale. As compared with those seen in the lateral columns of the spinal cord, they were not abundant or normal. Especially in the distal portions they were irregular, showed a tendency to be beaded, and seemed to be undergoing active degeneration. The ependyma-lined cavities were also identified. In one of them a mass of glial tissue was observed.

The measurements of the filum terminale internum vary and are not related to the length of the body. The variations in the length of the filum terminale internum in children and adults can be easily understood. Sex and associated pathological conditions play no part in the variations.

The author summarizes as follows:

The filum terminale internum contains all of the elements found in the spinal cord.

A large vein and two small arteries are discovered in association with the neurogenic tissue.

The more distal the segment examined, the less the amount of neurogenic tissue found.

The more distal the segment examined, the greater is the decrease in the component parts of the neurogenic tissue.

Tumors of the filum terminale internum should be similar in type to tumors in the spinal cord.

Devason, C., and Kaechner M.: Myelitic and Myelopathic Lesions, a Clinicopathological Study. I. Myelitis. *Arch. Neurol. & Psychiat.* 1933, xxix, 337.

Of forty-three cases of non-systemic spinal cord lesions studied clinically and histopathologically, only two could be properly classified as cases of "myelitis," that is, showing reactive processes, usually looked upon as inflammatory on the part of the polymorphonuclear leucocytes, plasma, and endothelial cells. The authors therefore warn against the uncritical use of the term "myelitis." For non-inflammatory lesions they prefer the term "myelopathy."

Leo M. Davison M.D.

Camp, J. D., Adson, A. W., and Shugros, J. J.: Roentgenographic Findings Associated with Tumors of the Spinal Column, Spinal Cord, and Associated Tissues. *Am. J. Cancer* 1933, xvi, 341.

Spinal tumors may arise from any of the primary tissues, and the vertebrae may become the site of metastatic implants. The secondary changes in bone produced by tumors primary in the spinal cord and associated tissues have long been recognized, but it was not until the authors reviewed a moderately large series of tumors arising within the spinal canal that they appreciated the frequency with which these bony changes are demonstrable roentgenographically.

Roentgenograms should be made both from the anteroposterior and lateral aspects, and supplementary stereoscopic and oblique views should be had. If the thoracic portion of the spinal column is involved and an intrathoracic mass is present, additional roentgenograms and roentgenoscopy of the thorax as a whole may be necessary for identification of the mass.

The roentgenologist is concerned chiefly with evidence of alterations in the structure of the vertebra or adjacent ribs. Changes in the vertebra usually consist in erosion secondary to direct pressure or invasion by the tumor, destruction due to a benign or malignant tumor, metastatic disease, or hyperostosis.

Spinal neurofibromata are benign and encapsulated. They affect the bone only by direct pressure with consequent erosion. The earliest changes to be roentgenographically demonstrable are erosion and thinning of the medial border of one or both of the vertebral pedicles. These are best seen in an anteroposterior view. Later evidence of erosion and thinning of the laminae can be discerned and changes in the pedicles of one or several vertebrae may be observed if the tumor remains within the spinal canal and enlarges by encircling up or down. Finally the contour of the bodies of the vertebrae may be changed. When the tumor extrudes through an intervertebral foramen the pedicles and laminae on the affected side of the vertebrae are eroded. The intervertebral foramen may be enlarged. When a tumor involving the thoracic portion of the spinal canal increases in size erosion of the ribs, bulging of the surrounding soft tissues, and intrathoracic extension may be seen.

The roentgenological changes produced by spinal endotheliomas are similar to those caused by neurofibroma. However, endotheliomas do not extend through the intervertebral foramina. Occasionally the calcified psammoma bodies which often accompany these tumors are dense enough to cast shadows.

Intradural tumors rarely produce roentgenographic abnormalities unless they have caused sufficient expansion of the spinal cord to bring about pressure erosion. Bony changes are usually preceded by clinical signs of neurological significance.

Ependymal-cell gliomata may cause erosion by expansion and direct pressure. The margins of the eroded bone are sharp and well-defined. The tumor may involve one or more vertebrae. It occurs most frequently in the lumbosacral region.

Chordomata may produce erosion and even complete destruction of the laminae and spinous processes of the sacrum. They are infiltrating, irregular, and not well defined. They can be distinguished roentgenographically from ependymal-cell gliomata.

Dermoid tumors arising in the region of the sacrum and the group of antenatal dermoid tumors known as Kildendorfer tumors may cause localized erosion of the body of the sacrum, but rarely invade the laminae or spinous processes.

The benign tumors of the vertebrae include osteomata, osteochondromata, chondromata, fibrochondromata,

dromata, foreign-body giant-cell tumors, and hæmangiomas

Pure osteomata rarely arise from vertebræ

Osteochondromata arising from vertebræ have the same roentgenological features as osteochondromata arising from other bones. Most of them arise from the vertebral processes rather than from the bodies of the vertebræ. They may cause distortion and erosion of contiguous bony structures as they increase in size.

Foreign-body giant-cell tumors have the same characteristics in the vertebræ as in other bones. Usually the bodies and pedicles of the vertebræ are involved, less often the laminae and bony processes. The tumor sometimes must be distinguished from myelosarcoma, metastatic hypernephroma, osteitis fibrosa, and occasionally Paget's disease.

Hæmangiomas of the vertebræ cause irregular absorption of trabeculae and thickening of the remaining vertical trabeculae with resulting parallel vertical striations in the bodies of the vertebræ. The abnormal trabeculations may extend into the vertebral arches and laminae. Roentgenographically, hæmangiomas must be distinguished from Paget's disease, osteitis fibrosa, and osteoporosis.

The roentgenological features of primary osteogenic sarcoma involving a vertebra are the same as those of primary osteogenic sarcoma of other bones. The usual picture is one of dissolution and destruction of bone with secondary involvement of paravertebral soft tissues. The changes in the vertebræ are practically identical with those resulting from sarcoma arising in the intraspinal or paraspinal soft tissues.

The most common metastatic malignant growths in the vertebræ are carcinoma, hypernephroma, myeloma, and lymphoblastoma.

Fibrochondromata ("ecchondrosis") are not roentgenographically visible. They arise from the intervertebral disks and may follow trauma. Intraspinal injections of radiopaque oil may help in their identification.

Hypertrophic osteitis consists in proliferative changes of the laminae, spines, pedicles, and bodies of the vertebræ. The lesions vary from localized hypertrophy with narrowing of the spinal canal to massive fusion of several spinous processes, laminae, and vertebræ producing marked compression of the spinal cord. The symptoms resemble those of intraspinal tumors. The onset of motor and sensory disturbance is characterized by local pain and progressive loss of function. The intraspinal extension of marginal vertebral hyperostosis and narrowing of the intervertebral foramina by proliferative changes about destroyed lateral articulations are best studied by means of stereoscopic roentgenograms made in the anteroposterior and lateral positions.

When the original roentgenograms and clinical localization are inconclusive, the intraspinal injection of radiopaque oil may be necessary for the localization of a suspected tumor. The oil may be introduced into the cisterna cerebellomedullaris or the lumbar portion of the spinal canal. As the oil occasionally produces mechanical and chemical meningitis and radiculitis, it should be removed at operation so far as possible. If sufficient information can be obtained without its use, it should not be employed.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Dawson, E. K.: Carcinoma in the Mammary Lobule and Its Origin. *Edinburgh M J* 1933, 21, 57

In discussing the relation of carcinoma to the various mammary structures the author gives the following definitions.

A *ductule* is a tube-like outgrowth from a terminal duct which forms the end-piece of the glandular tissue in the quiescent (non-secreting) breast. An *acinus* is the secreting element, which is lined by a single layer of epithelium and is normally present only during pregnancy and lactation. A *lobule* is a grouping of the terminal glandular structures of the breast. It may be quiescent or secreting. The quiescent form is composed of ductules, and the secreting form of acini. *Adenosis* is an increase of glandular tissue without any suggestion of tumor formation. *Epithelioid* is an increase of cells or curving within the glandular structures with or without an increase in the number of duct or lobular elements.

If the squamous or transitional epithelium which lines the ends of the main ducts on the nipple is excluded, malignant epithelial growth in the breast must arise at some level between this end and the lobule. The author believes that in the majority of cases carcinoma is histologically recognizable before invasion beyond the basement membrane occurs. Examination of 6 malignant tumors of the breast removed during pregnancy or lactation yielded no evidence that cancerous growth is in any way associated with proliferative activity in acini formed during these periods.

The author discusses the following 4 possible origins of cancer of the breast: (1) primary origin in the ducts with secondary spread to the ductules, (2) simultaneous origin in the duct and ductule, (3) independent origin in the duct and ductule, and (4) primary origin in the ductule with spread to the associated duct. He concludes that carcinoma of the breast usually arises in the small terminal intralobular ducts and may or may not involve the ductules secondarily. He believes that the last three modes of origin discussed are not supported by the evidence. In support of the theory that the duct is always the site of malignant proliferation and the ductule involvement is always secondary he cites the work of Maximow. In the examination of over 600 malignant breast tumors many of which were in the early stages of growth, the site of origin of the malignancy being still recognizable, no instance of primary ductule carcinoma was found.

The possibility that an adenoma may become malignant requires further study. A malignant

growth arising in a fibro-adenoma is of a sarcomatous type. It appears that cancerous proliferation in the breast is always associated with an epithelioid rather than an adenoma.

EARL O. LAMIER, M.D.

TRACHEA, LUNGS, AND PLEURA

Forss, J. H.: Closed Intrapleural Pneumolysis in the Artificial Pneumothorax Treatment of Pulmonary Tuberculosis. *J Thorac Surg* 1933, 2, 270.

Twenty-eight cases of intrapleural pneumolysis are analyzed. The author states that when artificial pneumothorax is induced, satisfactory compression is obtained in about half of the cases and is prevented by local adhesions in from 30 to 40 per cent. Of the latter group, from a third to a half are suitable for closed intrapleural pneumolysis.

When adhesions suitable for division prevent satisfactory collapse, they may be stretched by increasing the positive pressure, severed under visual control by open pneumolysis, or severed by the closed method first used by Jacobson. Stretching by increasing the positive pressure increases the incidence of spontaneous pneumothorax by 40 per cent, and open pneumolysis increases the incidence of empyema and mediastinal shift. The procedure of choice is the Jacobson method.

The indications for cauterization in artificial pneumothorax depend upon the thoracoscopic findings. The following four groups of cases are suitable for thoracoscopy: (1) those in which the pneumothorax is insufficient because of adhesions, (2) those in which the compression is sufficient in spite of adhesions, but a high intrapleural pressure is required to maintain the collapse, (3) those in which the pneumothorax is unsatisfactory because of organization of adhesions with contraction and pulling out of a cavity once satisfactorily closed, and (4) those in which further information is desired before open pneumolysis is undertaken. In the presence of an acute purulent empyema with fever the procedure is contra-indicated.

The author recommends the electrocautery method described by Matson. He prefers it to the use of the actual cautery which he employed at first. He describes and explains the various types of adhesions which may be encountered and emphasizes the importance of studying adhesions carefully with the thoracoscope before attempting cauterization in order to avoid opening large vessels entering the lung. He states that in cases of broad band adhesions which become blended with the lung incompletely cauterization is sometimes successful. By pressing on the interspace from without

the exact point of attachment of the adhesions can be located and the cautery introduced in the most favorable position

The immediate operative dangers are injury to the lung and hæmorrhage. Hæmorrhage may occur from vessels within the adhesions themselves or, if the division has been effected through the parietal attachment, from the intercostal vessels. It can usually be controlled with the coagulating electrode. If it cannot be so controlled the chest should be filled with saline solution to a high intrapleural pressure. The routine postoperative treatment is described.

Of the twenty-eight cases reviewed, a serous exudate occurred prior to the operation in six and subsequent to it in sixteen. Tuberculous empyema developed in two, a pyogenic empyema in six, and a pleurocutaneous fistula in two. In one case spontaneous pneumothorax occurred before the operation and in four after the operation. In one there was a moderate hæmorrhage. The incidence of complications has been reduced since the use of electrosurgery.

In sixteen (61.5 per cent) of the cases there was a satisfactory clinical and technical result, although in all of these cases the prognosis had been poor. In seven (27 per cent), the treatment was technically successful, but the clinical course was not altered. In three cases the treatment was both clinically and technically unsuccessful. In two cases satisfactory clinical improvement occurred although the cauterization was incomplete.

FRANK B. BERRY, M.D.

Churchill, E. D. The Surgical Treatment of Carcinoma of the Lung. *J. Thoracic Surg.*, 1933, 11, 254.

The author reports four cases of carcinoma of the lung. In two, exploration showed the condition to be inoperable. In the third the carcinoma involved the right lower lobe and this lobe was removed with the tumor. The patient died on the third day from bronchopneumonia. In the fourth case the right lower and middle lobes were removed in one stage and the bronchus was sutured and buried in the upper lobe. The patient made an uneventful recovery. Avertin was used with nitrous oxide anaesthesia.

The author urges that, with earlier diagnosis, more careful studies be made of the tracheo-bronchial lymphatic system, and that the paths of local extension to the adjacent lung, pleura, and mediastinum be carefully recorded. He states that any patient with hæmorrhage from the lung, bronchial obstruction, or pleural effusion should be most carefully examined for bronchial carcinoma. At present the final decision as to the possibility of removing a carcinoma of the lung can be made only by exploration of the chest. However, X-ray evidence of distant metastases, direct evidence of local extension, and bronchoscopic examination may definitely show the futility of operation in advanced

cases. As the tumors frequently metastasize to the brain, a careful neurological examination should be made.

In the pre-operative preparation careful attention should be paid to oral hygiene. A partly autogenous pneumococcus vaccine has been used for one or two weeks prior to operation. Pneumothorax should be induced for from one to three weeks, and it is advisable to crush the phrenic nerve shortly before the operation. In the author's cases the patient is given avertin and placed in the Trendelenburg position. Differential pressure is maintained with oxygen and nitrous oxide through an intratracheal tube. The incision is that described by Lilienthal. The entire lobe is removed. After separate ligation of its vessels the bronchus is cut across with care to avoid crushing or other undue trauma. The stump is then sutured carefully and buried in the surface of an adjacent lobe. Finally a catheter is introduced in the costophrenic sinus and the wound closed without further drainage. After the operation the patient is placed in an oxygen tent, cough is controlled with codeine or pantopon, and attention is directed to the relief of respiratory embarrassment. The catheter is removed after drainage ceases.

FRANK B. BERRY, M.D.

Hedblom, C. A. Tuberculous Empyema. *Acta chirurg. Scand.*, 1932, 121, 311.

Tuberculous empyema may be primary (without clinically recognizable pulmonary tuberculosis) or secondary to a pulmonary lesion. It is proved to be tuberculous by the microscopic demonstration of tubercle bacilli in the exudate, by culture, by animal inoculation, by the demonstration of tubercles in the pleura by thoracoscopy (Jacobaues), or by biopsy. It may be infected secondarily by pyogenic bacteria. A complicating bronchial fistula usually results in secondary pyogenic infection. Thoracotomy drainage always results in secondary infection. A large proportion of cases of tuberculous empyema are secondarily infected by injudicious thoracotomy drainage.

The aim of treatment of a primary tuberculous empyema not secondarily infected by pyogenic organisms is obliteration of the cavity by re-expansion of the lung. This may be accomplished in whole or in part by substituting a negative tension pneumothorax for the pyothorax. If a residual cavity persists, it may be obliterated by extrapleural thoracoplasty.

In a case in which a tuberculous empyema proved sterile by cultures of the pus complicates an active pulmonary tuberculosis on the same side the aim is to obliterate the cavity by a several-stage extrapleural thoracoplasty following aspiration of the pus.

A tuberculous empyema secondarily infected by virulent pyogenic organisms requires immediate adequate drainage to combat the pyogenic infection. Closed drainage (Buelau) with frequent irrigation of the cavity is tolerated by the patient far better than rib resection and open drainage, but if a large

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Dawson, E. K.: Carcinoma in the Mammary Lobule and Its Origin. *Lancet* 11/7/1933, 21, 57

In discussing the relation of carcinoma to the various mammary structures the author gives the following definitions:

A *ductule* is a tube-like outgrowth from a terminal duct which forms the end-piece of the glandular tissue in the quiescent (non-secreting) breast. An *acinus* is the secreting element, which is lined by a single layer of epithelium and is normally present only during pregnancy and lactation. A *lobule* is a grouping of the terminal glandular structures of the breast. It may be quiescent or secreting. The quiescent form is composed of ductules, and the secreting form of acini. *Adenosis* is an increase of glandular tissue without any suggestion of tumor formation. *Epitheliosis* is an increase of cells occurring within the glandular structures with or without an increase in the number of duct or lobular elements.

If the squamous or transitional epithelium which lines the exits of the main ducts on the nipple is excluded, malignant epithelial growth in the breast must arise at some level between this exit and the lobule. The author believes that in the majority of cases carcinoma is histologically recognizable before invasion beyond the basement membrane occurs. Examination of 6 malignant tumors of the breast removed during pregnancy or lactation yielded no evidence that cancerous growth is in any way associated with proliferative activity in acini formed during these periods.

The author discusses the following 4 possible origins of cancer of the breast: (1) primary origin in the ducts with secondary spread to the ductules, (2) simultaneous origin in the duct and ductule, (3) independent origin in the duct and ductule, and (4) primary origin in the ductule with spread to the associated duct. He concludes that carcinoma of the breast usually arises in the small terminal intralobular ducts and may or may not involve the ductules secondarily. He believes that the last three modes of origin discussed are not supported by the evidence. In support of the theory that the duct is always the site of malignant proliferation and the ductule involvement is always secondary he cites the work of Maximow. In the examination of over 600 malignant breast tumors, many of which were in the early stages of growth, the site of origin of the malignancy being still recognizable, no instance of primary ductule carcinoma was found.

The possibility that an adenoma may become malignant requires further study. A malignant

growth arising in a fibro-adenoma is of a sarcomatous type. It appears that cancerous proliferation in the breast is always associated with an epithelioma rather than an adenoma.

EARL O. LATIMER, M.D.

TRACHEA, LUNGS, AND PLEURA

Forsee, J. H.: Closed Intrapleural Pneumolysis in the Artificial Pneumothorax Treatment of Pulmonary Tuberculosis. *J. Thorac. Surg.* 1933, 11, 270.

Twenty-eight cases of intrapleural pneumolysis are analyzed. The author states that when artificial pneumothorax is induced, satisfactory compression is obtained in about half of the cases and is prevented by local adhesions in from 30 to 40 per cent. Of the latter group, from a third to a half are suitable for closed intrapleural pneumolysis.

When adhesions suitable for division prevent satisfactory collapse, they may be stretched by increasing the positive pressure, severed under visual control by open pneumolysis, or severed by the closed method first used by Jacobaeus. Stretching by increasing the positive pressure increases the incidence of spontaneous pneumothorax by 40 per cent, and open pneumolysis increases the incidence of empyema and mediastinal shift. The procedure of choice is the Jacobaeus method.

The indications for cauterization in artificial pneumothorax depend upon the thoracoscopic findings. The following four groups of cases are suitable for thoracoscopy: (1) those in which the pneumothorax is insufficient because of adhesions, (2) those in which the compression is sufficient in spite of adhesions, but a high intrapleural pressure is required to maintain the collapse, (3) those in which the pneumothorax is unsatisfactory because of organization of adhesions with contraction and pulling out of a cavity once satisfactorily closed, and (4) those in which further information is desired before open pneumolysis is undertaken. Is the presence of an acute purulent empyema while the procedure is contra-indicated.

The author recommends the electrocautery method described by Manton. He prefers it to the use of the actual cautery which he employed at first. He describes and explains the various types of adhesions which may be encountered and emphasizes the importance of studying adhesions carefully with the thoracoscope before attempting cauterization in order to avoid opening large vessels or entering the lung. He states that in cases of broad band adhesions which become blended with the lung incomplete cauterization is sometimes successful. By pressing on the latraps from without

the exact point of attachment of the adhesions can be located and the cautery introduced in the most favorable position

The immediate operative dangers are injury to the lung and hæmorrhage. Hæmorrhage may occur from vessels within the adhesions themselves or, if the division has been effected through the parietal attachment, from the intercostal vessels. It can usually be controlled with the coagulating electrode. If it cannot be so controlled the chest should be filled with saline solution to a high intrapleural pressure. The routine postoperative treatment is described

Of the twenty-eight cases reviewed, a serous exudate occurred prior to the operation in six and subsequent to it in sixteen. Tuberculous empyema developed in two, a pyogenic empyema in six, and a pleurocutaneous fistula in two. In one case spontaneous pneumothorax occurred before the operation and in four after the operation. In one there was a moderate hæmorrhage. The incidence of complications has been reduced since the use of electrosurgery

In sixteen (61.5 per cent) of the cases there was a satisfactory clinical and prognostic result, although in all of these cases the prognosis had been poor. In seven (27 per cent), the treatment was technically successful, but the clinical course was not altered. In three cases the treatment was both clinically and technically unsuccessful. In two cases satisfactory clinical improvement occurred although the cauterization was incomplete

FRANK B. BERRY, M.D.

Churchill, E. D. The Surgical Treatment of Carcinoma of the Lung. *J. Thoracic Surg.*, 1933, 11, 254

The author reports four cases of carcinoma of the lung. In two, exploration showed the condition to be inoperable. In the third the carcinoma involved the right lower lobe and this lobe was removed with the tumor. The patient died on the third day from bronchopneumonia. In the fourth case the right lower and middle lobes were removed in one stage and the bronchus was sutured and buried in the upper lobe. The patient made an uneventful recovery. Avertin was used with nitrous oxide anaesthesia

The author urges that, with earlier diagnosis, more careful studies be made of the tracheo-bronchial lymphatic system, and that the paths of local extension to the adjacent lung, pleura, and mediastinum be carefully recorded. He states that any patient with hæmorrhage from the lung, bronchial obstruction, or pleural effusion should be most carefully examined for bronchial carcinoma. At present the final decision as to the possibility of removing a carcinoma of the lung can be made only by exploration of the chest. However, X-ray evidence of distant metastases, direct evidence of local extension, and bronchoscopic examination may definitely show the futility of operation in advanced

cases. As the tumors frequently metastasize to the brain, a careful neurological examination should be made

In the pre-operative preparation careful attention should be paid to oral hygiene. A partly autogenous pneumococcus vaccine has been used for one or two weeks prior to operation. Pneumothorax should be induced for from one to three weeks, and it is advisable to crush the phrenic nerve shortly before the operation. In the author's cases the patient is given avertin and placed in the Trendelenburg position. Differential pressure is maintained with oxygen and nitrous oxide through an intratracheal tube. The incision is that described by Lilienthal. The entire lobe is removed. After separate ligation of its vessels the bronchus is cut across with care to avoid crushing or other undue trauma. The stump is then sutured carefully and buried in the surface of an adjacent lobe. Finally a catheter is introduced in the costophrenic sinus and the wound closed without further drainage. After the operation the patient is placed in an oxygen tent, cough is controlled with codeine or pantopon, and attention is directed to the relief of respiratory embarrassment. The catheter is removed after drainage ceases

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EARL O. LATIMER, M.D.

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inorganic change in the sympathetic system supplying the epicardia. It begins with fixation of the resting tone of the sphincteric muscles of the epicardia (the circular muscle), probably as the result of trauma from coarse food in the cases of persons with a predisposition. This is followed by hypertrophy of the thoracic œsophagus to overcome the obstruction to the passage of food and terminates in atony of the dilated œsophagus with dysphagia, regurgitation of food, and malnutrition. Auerbach's autonomic plexus, situated between the longitudinal and circular muscle layers, maintains the tonus of closure. This is not sufficient for spasm, but it no longer responds to the normal reflex of opening (achalasia of Hurst) and is overcome only by the weight of food accumulating in the œsophagus.

Stretching by sounds or balloons and the incision of Heller are curative insofar as they paralyze the autonomic neuromuscular function of the epicardia, but as the lesions they produce are reparable, recurrences are frequent.

The author describes an operation, first suggested by him in 1924, which is intended to destroy Auerbach's plexus throughout the entire epicardial region and thereby effect a radical cure of the condition. It consists of decortication of the epicardia from its adventitia and longitudinal muscle in the plane occupied by the plexus. It causes paralytic dilatation of the circular muscle which tonically closes the epicardia and corrects the obstruction permanently.

The author reports four cases in which it was performed. In all, it resulted in marked improvement. The dysphagia and regurgitation ceased, and there was no incontinence of the epicardia. However, some stasis of food in the œsophagus still persisted, apparently because gastric hypertonicity persisted in spite of resection of the vagi at the level of the decortication.

EUGENE T. LEDDY, M.D.

Eggers, C. Experiences with Carcinoma of the Esophagus. *J. Thoracic Surg.*, 1933, 11, 229.

The author reports seventeen carcinomata of the œsophagus—five involving the upper end, nine the thoracic portion, and three the cardia. Not one was in the early stages. In the majority of the cases the symptoms had been present for over six months before the diagnosis was made.

In only thirteen of the seventeen cases was it possible to remove the tumor and complete the operation. In four (30.7 per cent), the patient recovered and lived for from four and a half to eighteen months. Two of the four patients who recovered had a carcinoma of the upper end of the œsophagus and two a carcinoma of the thoracic portion. In the three cases of carcinoma involving the cardia there were no recoveries.

In several cases in which a carcinoma of the œsophagus was suspected too much reliance was placed on a negative X-ray examination, and in others the biopsy report was "no malignancy" when a carcinoma was present. Therefore one should not

accept a single negative X-ray or biopsy report. The condition is best diagnosed by œsophagoscopy with biopsy.

There are no early pathognomonic symptoms of carcinoma of the œsophagus. As a rule the patient does not present himself for examination until he experiences difficulty in swallowing, and this symptom generally means some degree of obstruction and advanced disease. All patients complaining of difficulty in swallowing should be examined with the X-ray and the œsophagoscope.

Not until operation is performed before the patient has become emaciated and dehydrated and before the disease has advanced as far as in the cases reported will it be possible to achieve substantially better results. Even when the diagnosis is made early and when the general condition is fair, operation for carcinoma of the œsophagus is formidable. However, the technical difficulties have been largely mastered so that the problem appears less difficult than some years ago.

EARL O. LATIMER, M.D.

Friedman, M. The Suture Method in Resections of the Thoracic Portion of the Esophagus (Zur Nahtmethodik bei Resektionen des Brustteils der Speiseröhre). *Nat. chir. Arch.*, 1931, xxii, 575.

In addition to the danger of pneumothorax, intrathoracic resection of the œsophagus is rendered difficult by the absence of a serous covering with consequent insufficiency of the suture, infection of the pleura and the mediastinum, and the absence of a mesentery with consequent poor motility of the organ. The author believes that the greatest difficulty is the insufficiency of the suture. In this article he reports experimental investigations in which he attempted to solve the problem by forming a serous covering for the part of the œsophagus to be sutured by means of a free omental plastic operation, transplantation of the visceral pleura, and a pedunculated costopleural plastic operation.

Experiment 1, Series 1. Ten dogs were given morphine and anesthetized with ether by the Meltzer-Auer method. In the first stage of the operation a sufficiently large flap of the greater omentum was resected through a laparotomy wound, and bilateral phrenicotomy to cause paralysis of the diaphragm was done through a wide thoracotomy opening. Unless the diaphragm is paralyzed its movement will interfere with the performance of the operation and will endanger the integrity of the site of the suture by pulling the sutured ends of the œsophagus apart. Next, the vagus nerves were divided or injected perineurally with a 1 per cent solution of novocain. The piece of omentum was wound around the exposed portion of the œsophagus and fixed to it with sutures. In the second stage of the operation, which was performed from four to fifteen days later, the œsophagus was divided in the middle of the transplanted piece of omentum and its distal end was closed completely. The diaphragm was then split, the stomach was pulled into the thoracic cavity, and an œsophagogastrostomy was done. Two

bronchial fistula is present open drainage may be necessary. After the secondary infection is controlled a thoracoplasty is usually necessary to obliterate the cavity in the primary type, and the pulmonary tuberculosis and empyema furnish a double indication for it in the secondary type. For the obliteration of an infected residual cavity a secondary resection of the parietal pleura usually is necessary.

Of a series of 143 patients with tuberculous empyema, 61 were treated by aspiration, irrigation, and drainage only. Of these, 32 (56 per cent) died. Eighty-one were subjected to radical surgical treatment. Of these, 23 had no secondary infection. The cavity was obliterated in 18 (74.7 per cent). There was no mortality. Of the 58 with secondary infection, the cavity was obliterated in 35 (64.4 per cent) but a sinus persisted in 19. Twelve (20 per cent) died.

The mortality in tuberculous empyema is due in large measure to active tuberculosis or a virulent infection or both. Cavities should be obliterated early to prevent infection. When infection is present, the first object of treatment should be to combat it.

HEART AND PERICARDIUM

Powers, J. H., and Bowie, M. A.: Experimental Surgery of the Pulmonic Valve. *Arch. Surg.* 1933, XLIV, 212.

Powers and Bowie carried out two experimental procedures on dogs. The first consisted of electrocoagulation of the pulmonic valve under guidance of the hand and eye after opening of the right ventricle and subsequent inoculation with cultures of *streptococcus viridans* by intravenous injection. Acute vegetative endocarditis developed on the tricuspid valve. As the lesions healed, the cusps became thickened, fibrous, and inelastic and the edges tended to adhere to one another. The end result was stenosis of the pulmonic orifice.

The second experimental procedure consisted of conversion of the pulmonic stenosis into stenosis with insufficiency. This was accomplished by reopening the heart in the old healed scar and excising a segment of the pulmonic valve with the cardiovalvulotome. The operation was well tolerated, and the animals lived for twenty months without evidence of cardiac decompensation.

The suggestion is made that in certain selected cases of congenital pulmonic stenosis the condition may be amenable to surgical treatment.

J. DANIEL WILLIAMS, M.D.

Kernblum, K., Bellot, S., and Osterum, H. W.: Tuberculous Pericarditis: Its Roentgenological Significance. *Am. J. Roentgenol.* 1933, XLIV, 203.

The authors' study of seventeen cases of tuberculous pericarditis showed roentgen-ray examination to be one of the most important procedures in the investigation of this condition. In several cases it

afforded the first intimation of the tuberculous nature of the disease. Frequently, however, such a diagnosis can be arrived at only after a careful correlation with the clinical aspects of the case. Following a discussion of the incidence, pathological changes, and symptoms of the condition and the findings of physical examination and laboratory studies, the authors report several cases in detail.

The exudative type of the disease is the type most frequently recognized by roentgen examination. If considerable effusion is present, the marked enlargement and rather characteristic pyramidal or water-bottle shape of the cardiac silhouette, and the absence of pulsations make its recognition comparatively easy. When the effusion is moderate, the enlarged heart shadow may simulate that of cardiac hypertrophy or dilatation, but can usually be differentiated from the former by the decrease of the cardiac pulsations and from the latter by a definite change in the shape of the cardiac shadow with change in the patient's position. When the effusion is less than 500 c.c.m., roentgenological recognition of the condition is almost impossible.

The determination of the tuberculous nature of the disease is aided by the detection of a simultaneous pulmonary tuberculosis. Enlarged tuberculous tracheobronchial or cervical glands or tubercles anywhere in the body should suggest tuberculosis as a possible cause of the pericardial disease. In the absence of tuberculosis elsewhere, the demonstration of pericardial adhesions, especially at the base of the heart, should suggest this possibility. The presence of such adhesions may be inferred when a shadow otherwise characteristic of pericardial effusion is unusually narrow in the suprasternal region and fails to widen when the patient is in the recumbent position. Tuberculosis is suggested also by adhesions involving adjacent structures which prevent the alteration in the shape of the heart which occurs normally on deep inspiration and expiration.

When tuberculosis is suspected as the cause of a pericardial effusion, air introduced after the withdrawal of fluid will demonstrate the size of the heart as seen roentgenographically, and the finding of a small heart suggests that the condition is tuberculous. This procedure may aid also in the demonstration of adhesions.

In the adhesive variety of tuberculous pericarditis roentgenological recognition is less certain and depends mainly upon the detection of pericardial adhesions.

ADOLPH HARTMAN, M.D.

ESOPHAGUS AND MEDIASTINUM

Racine, J. F.: Cardiospasm, Dysphagia, and Mega-Esophagus. Esophageal Sympathetic Tomy (Cardiospasm, *disphagia*, *mega esophago*, *sympathectomia esophagica*). *Arch. med. et chir.* 1933, XLIV, 63.

The author states that cardiospasm is a condition of reflex origin, a dyspepsia of the Babinsky-Froment type, a disease of muscle tone produced by an

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Smith, R. S. Passive Antitoxic Immunity in Streptococcal Infection of the Peritoneum *Surg, Gynec & Obst*, 1933, lvi, 169

The author reports experiments carried out on rabbits in which a Dochez strain of streptococcus from a case of scarlet fever was used.

Ten rabbits which received subcutaneous injections of 2 c.cm. of antitoxin sixteen hours previously and ten normal controls were given an intraperitoneal injection of 10 c.cm. of a sixteen-hour tryptic digest broth culture of the streptococcus. The animals were studied in pairs, one protected by antitoxin and one unprotected, and were selected according to breed, sex, and weight. All of the unprotected rabbits died in from six to twenty hours, whereas all of the protected animals survived. The latter were killed at intervals after recovery from the acute infection.

In the blood an early leucocytosis followed by a marked leucopenia was characteristic of the reaction to the inoculation with streptococcal culture in both the immunized animals and the controls.

Blood cultures indicated that a more severe bacteremia occurred in the unprotected rabbits. Six hours after infection all of these animals yielded a positive blood culture, whereas in the cases of the protected animals only one test was positive.

In the protected animals, which were killed after their recovery from the acute phase of the infection, there was a marked hyperplasia of the lymphoid tissues throughout the body with a pronounced myeloblastic reaction in the bone marrow.

These experimental data demonstrate that a high degree of immunity to intraperitoneal inoculation with toxigenic, moderately virulent scarlatinal streptococcus can be produced by the administration of specific antitoxin and that the highest degree of passive antitoxic immunity to streptococcal infection of the peritoneum is produced by prophylactic administration of the serum.

CHARLES F. DuBois, M.D.

GASTRO-INTESTINAL TRACT

Tripp, C. M. Oral Administration of Metaphen in the Treatment of Gastric and Duodenal Ulcers *Ann Int Med*, 1933, vi, 901

During the last four years a 1:500 solution of metaphen, an organic mercurial preparation, was given in twenty-six cases of gastric ulcer and fifty-six cases of duodenal ulcer. In twenty-seven of the cases, thorough X-ray studies had been made, and in all there was a psychoneurosis of the hysterical, anxiety, or compulsion type. Four cubic centimeters

of the metaphen solution were given three times a day. No other medication was used, and there was no limitation of the diet.

The patients were relieved of pain in an average of three days without any demonstrable toxic effect from the metaphen. Not only were the subjective symptoms controlled, but there was roentgen evidence of objective improvement with complete disappearance of the gastric and duodenal lesions.

The author suggests that the action of metaphen may be due to control of infection in the gastrointestinal tract.

SAMUEL J. FOGELSON, M.D.

McIver, M. A. Acute Intestinal Obstruction. Second Installment *Am J Surg*, 1933, xix, 363

Early postoperative obstruction of the intestines is usually due to adhesions produced by an inflammatory exudate. In 335 cases of acute intestinal obstruction treated at the Massachusetts General Hospital, Boston, the average time between the original operation and the operation for obstruction was eleven days. In 37 cases the condition occurred soon after the operation. In 35 of 66 cases of early postoperative obstruction the condition followed appendectomy and in 29 of these a drain was used. In 10 cases it followed a pelvic operation on a woman, in 7 cases, an operation for carcinoma of the rectum, in 2 cases, an operation for carcinoma of the sigmoid, and in 1 case each, resection of the jejunum, closure of a perforated gastric ulcer, and the repair of a ventral hernia. In 9 cases it was due to miscellaneous causes. Strangulation is not common in early postoperative obstructions. Among 69 cases reviewed there were only 2 of strangulation by bands and 3 of strangulation by volvulus. Early postoperative obstructions occur most frequently in the lower portion of the small intestine. They are more common in males than in females. Of the 37 patients whose cases are reviewed, 30 were males.

The symptoms of early postoperative intestinal obstruction are similar to those of intestinal obstruction from any cause. In 12 of the 37 cases reviewed there was a complicating peritonitis which made it necessary to distinguish between paralytic ileus and mechanical obstruction. In addition to infection and trauma producing adhesions, operative procedures which alter the normal relations of the intestinal tract, such as anastomoses, enterostomies, and colostomies, may cause early postoperative obstruction. These procedures may result in abnormal apertures or arches through which the bowel herniates.

Volvulus of the bowel occurs relatively frequently. Its most common sites in the large intestine are the sigmoid flexure and the cæcum. An abnormally mobile portion of the bowel predisposes

of the dogs died from empyema and general exhaustion before the second stage of the operation and eight died one or two days after the second intervention. The union of the oesophagus and the stomach at the site of anastomosis was found to be complete.

Series 2. Ten dogs were anesthetized in the same way as those of the first series. Thoracotomy was then done, the exposed oesophagus dissected from the diaphragm, and the greater omentum drawn out through the opening in the diaphragm and wound around the oesophagus. After this operation six of the dogs died. In the second stage of the operation the oesophagus was divided, its distal end was closed completely and its proximal end sutured to the stomach or simple suture of the divided oesophagus without resection was done. All of the dogs died, one on the operating table and the others from one to eight days after the operation. At necropsy the oesophagus and stomach were found well united. Microscopic examination of the part of the oesophagus covered by the greater omentum revealed that the greater omentum was well united to the wall of the oesophagus and fully retained its properties as a serous covering. The dogs died because of too much trauma and the displacement of the stomach into the thoracic cavity.

Experiment 2. In this experiment a pleural leaf was used as a covering for the oesophagus. The use of the visceral layer alone for this purpose was impossible because of technical reasons, but the visceral layer with a thin layer of the pulmonary parenchyma was satisfactory. The five dogs treated in this manner recovered very well from the first stage of the operation, but four of them died after the second intervention. The pathologico-anatomical and microscopic investigations showed that, like the greater omentum, the pleura furnished a good serous covering for the oesophagus. The lung was covered with a delicate connective tissue and its parenchyma apparently did not suffer in any way.

Experiment 3. In two dogs the oesophagus was covered with pedunculated flaps of the costal pleura together with a thin layer of muscle. Both of the animals died from pneumonia two days after the operation.

As a result of his investigations the author draws the conclusion that transplantation of the great omentum and the visceral layer of the pleura together with a thin layer of pulmonary tissue permits the application of a typical Lambert suture with subsequent good adhesion of the oesophageal and gastric walls to be united.

G. ALDOV (Z)

ence of such a complication may save the patient from unnecessary and dangerous operations

In cirrhosis of the liver, ileus sometimes occurs fairly acutely with violent attacks of pain, distention of the abdomen, and meteorism. Ascites is generally present. Before operation, however, it is not always obvious and seldom present in large quantity. Cirrhosis of the liver is almost never diagnosed prior to operation as the meteorism renders examination difficult or the possibility of hepatic cirrhosis is not considered. In most cases, operation has been done because of the suspicion of ileus due to carcinoma of the intestine.

In cases of cirrhosis of the liver, ileus is to be regarded as a reflex phenomenon as in cases of gall stone colic, cholecystitis, and ureteral calculi. Pseudo-gall-stone colic in liver cirrhosis is well known. The effect of the reflex in the sympathetic area in the cases cited is not known. In liver cirrhosis the intestinal tract may be predisposed to the condition because of stasis in the portal vein.

Whenever possible, the treatment should be expectant. Opium and atropin preparations are recommended. In all but one of the surgically treated cases cited by the author death occurred as the result of the operation.

Mateer, J. G., and Hartman, F. W. Primary Carcinoma of the Duodenum. *J. Am. Med. Ass.*, 1933, *xcix*, 1853.

The authors report 6 primary carcinomata of the duodenum which were found among 176,000 patients admitted to their clinic. They classify carcinomata of the duodenum according to their site as (1) supra-ampullary, (2) peri-ampullary, and (3) infra-ampullary. In the discussion of their cases they include, for comparison, 2 cases of carcinoma arising in the common bile duct and 1 case of carcinoma arising in the small ducts at the head of the pancreas which came to autopsy.

In 5 of the 6 cases of primary duodenal carcinoma jaundice was present. In the case of infra-ampullary carcinoma it was absent. In the case of supra-ampullary carcinoma it was due to involvement of the common bile duct by inflammatory swelling in the head of the pancreas. In 1 case it cleared up completely on 2 occasions. The intermittency was explained by necrosis at the site of the growth which temporarily caused complete biliary obstruction. In 3 of the 4 cases of peri-ampullary carcinoma the patient had chills and fever, and in 2 of them multiple abscesses of the liver were found at autopsy. Two of the 6 patients died from gross hemorrhage.

In 3 cases a palpable tumor was present. Occult blood in the stool was a constant finding. In the absence of bleeding from the gums, peptic ulcer, and tumors of the stomach and colon, this is of great aid in the diagnosis. Duodenal biliary drainage is also of aid as persistent absence of bile from the duodenum is a reliable index of malignant biliary obstruction arising from the head of the pancreas, the common bile duct, or the ampulla of Vater.

In the case of supra-ampullary carcinoma the tumor had invaded the wall of the duodenum and was resting on the head of the pancreas, but the pancreas was not involved. The histological picture suggested that the neoplasm arose in a benign ulcer. There were large atypical cells forming pseudo-alveoli and numerous mitotic figures.

In the case of infra-ampullary carcinoma the margin of the tumor was only slightly indurated and not thickened or everted. The histological picture was that of an entirely undifferentiated carcinoma, and there were widespread metastases.

One of the peri-ampullary carcinomata showed squamous-celled and mixed squamous-celled and columnar-celled areas, which the authors explain on the same basis as metaplasia of the epithelium in the gall bladder.

The authors believe that intermittent jaundice of the obstructive type accompanied by fever is an important diagnostic criterion of peri-ampullary carcinoma.

With regard to the treatment they discuss the possibility of excising these growths provided they could be diagnosed early enough. They state that any attack on the tumor should be preceded by cholecystenterostomy. For cases of infra-ampullary carcinoma with obstruction they suggest gastroenterostomy or duodenojejunostomy.

ROSCOE R. GRAHAM, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Moss, W. Experimental Obstructive Jaundice. Its Effect on Fibrinogen and Coagulation of the Blood. *Arch. Surg.*, 1933, *xcvii*, 1.

The wide diversity of opinion and the conflicting data in the literature indicate that as yet there is no satisfactory explanation of the hemorrhagic tendency in patients suffering from jaundice. Moss reports experiments carried out on twenty-seven dogs to determine whether there is a relationship between the fibrinogen content of the blood plasma, the degree of icterus, and the coagulation time of the blood in obstructive jaundice. Jaundice was produced by dividing the common and accessory bile ducts. Of the twenty-one dogs which lived to develop marked jaundice, all died from diffuse hepatitis. The average length of survival was thirty-one and six-tenths days. The fibrinogen in the blood plasma was determined at intervals during the disease by the Wu method, the icterus index by the LaMotte-Pigford colorimetric method, and the coagulation time by the use of the Brodie-Russell-Boggs coagulometer.

It is evident from the results obtained that there is no parallelism between the fibrinogen content of the blood and the degree of icterus. During the first week following the obstruction, the fibrinogen content, the icterus index, and the coagulation time were increased, but during the second and third weeks the fibrinogen content continued to increase.

to volvulus. Volvulus usually causes early interference with the blood supply as the result of twisting of the vessels in the mesentery and marked distention of the gut. In 9 of the 15 cases of volvulus reviewed by the author there was serious interference with the circulation. In 5 the changes were so great that resection was necessary. In addition to the sigmoid and cecum, the volvulus may involve the small intestine. While volvulus of the sigmoid is believed to be more common than volvulus of the cecum, in the cases reviewed by the author the incidence of the two conditions was the same. Volvulus of the sigmoid is most common after middle age. It is characterized by the sudden onset of severe pain and vomiting. The pain is usually located in the left lower quadrant and radiates across the lower part of the abdomen. Other manifestations of the condition are obstipation and marked distention of the abdomen.

Volvulus of the cecum may occur in a number of different ways. The cecum may be bent on itself so that the lower part of the posterior surface becomes anterior and lies with the appendix along the ascending colon, or it may be rotated and twisted clockwise on its long axis. In cases in which the cecum and the ascending colon have a long mesocolon, the bowel may be twisted on its mesenteric axis in the same way as in sigmoid volvulus. In most instances there are congenital malformations in the development of the gut.

In the small intestine volvulus is most frequent in the lower portion of the ileum. The most frequent cause of volvulus of the small intestine is probably fixation or distortion of the mesentery by bands of adhesions.

Of 5 cases in the author's series in which volvulus complicated convalescence from an abdominal operation, the small intestine was involved in 3 and the cecum in 2. In 2 cases reviewed, the volvulus occurred without a previous operation.

Intussusception is of 3 types. Enteric intussusception is relatively infrequent, occurring in only from 10 to 15 per cent of all cases. However, as it occurs in older children and adults, its incidence as determined in a given clinic depends upon the ratio of infants to older persons admitted to that clinic. As a rule it is due to a pedunculated tumor such as a polyp, carcinoma, or hemangio-endothelioma.

In about 6 per cent of cases of intussusception only the colon is involved. Colonic intussusception also occurs in adults and is usually due to a tumor.

Most common is intussusception involving the terminal ileum, the cecum, and the colon. This is of the following 3 types: (1) the ileocecal type, in which the ileocecal valve heads the intussusception, (2) the ileocolic type, in which the ileum is found within the cecum, but the valve does not form the apex (the intussusception begins in the terminal ileum close to the valve and passes through the valve) and (3) the compound ileocolic type, in which an enteric intussusception starting in the ileum about 15 in. from the ileocecal valve enters the

colon by pushing the valve before it. Meckel's diverticulum may act as a pedunculated tumor by becoming inverted.

The lesion in intussusception depends largely on the extent of the involvement of the mesenteric circulation. If there is no constriction of the mesenteric vessels the intussusception may be tolerated for a long time. In most cases, however there is a constriction of the veins which produces swelling and edema of the intestinal wall. As the result of infarction caused by interference with the blood supply the intussusception may become necrotic.

Acute intussusception occurs most frequently in the first year of life and is more apt to occur in well-nourished than in poorly-nourished infants. It is twice as common in males as in females. It is most frequent in the spring and winter. Its onset is sudden. The pain is of a colicky type. Following 1 or 2 normal evacuations, blood and mucus may be passed. In adults, the picture is not so characteristic as in children.

ALVIN OSMOND, M.D.

Petrén, G.: Ileostomy in Mechanical Obstruction of the Intestine Following Acute Appendicitis (Über Ileostomie bei mechanischem Darmabdomen im akuten Appendicitis-Nachstadium). *Acta chir. Scand.*, 1934, 111, 345.

The author concludes from his experience that at laparotomy for mechanical ileus developing after an operation for appendicitis-peritonitis, the surgeon should usually be content with ileostomy under local anesthesia.

Anschütz, W.: Ileus in Cirrhosis of the Liver (Über Ileus bei Lebercirrhose). *Acta chir. Scand.* 93, 111, 52.

In the first part of his article the author discusses the difficulties in the diagnosis of ileus. The condition must be differentiated from a transient disturbance of the passage through the gut. With regard to this differentiation the author calls attention to a valuable sign which is easy to demonstrate, viz a tinkling splash in some of the loops. A negative outcome of this test is not reliable. More reliable is the roentgen demonstration of mirror formation in the intestine. This should always be used as a control.

The difficulties in the determination of the cause and therefore of the prognosis of ileus have led to a somewhat schematic but nevertheless for the present quite justifiable indication for operation. Too long delay of treatment may jeopardize the patient's health.

In the second part of his article the author reports the clinical histories of six cases of cirrhosis of the liver with ileus in which the diagnosis was verified by operation and autopsy and cites two cases which were not operated upon. In discussing four cases reported by others he states that the association of ileus and similar disturbances with cirrhosis of the liver is by no means so rare as might be supposed from the literature. Knowledge of the pres-

osmotic resistance of the erythrocytes was diminished, hæmolysis began at from 0.58 to 0.6 per cent. In the white-cell count the cells with segmented nuclei amounted to 61.5 per cent, the cells with rod-shaped nuclei to 15 per cent, the immature cells to 15 per cent, the lymphocytes to 11.5 per cent, and the monocytes to 10.5 per cent. Five years and two months after the operation the erythrocyte count was 4,690,000, and hæmolysis began at from 0.52 to 0.54 per cent.

The third case was that of a man twenty-four years of age. Before the operation the erythrocyte count was 2,700,000, the leucocyte count was 7,000, and hæmolysis began at from 0.54 to 0.56 per cent. The serum-bilirubin was increased. One year after the operation the erythrocyte count was 5,000,000, the leucocyte count was 9,300, and hæmolysis began at 0.56 per cent.

On the basis of his good results the author recommends splenectomy.

W. POHLE (Z)

MISCELLANEOUS

Sauerbruch, F., Chaoul, H., and Adam, A. An Anatomicoclinical and Roentgenological Contribution on Hiatus Hernia (Anatomisch-klinischer und roentgenologischer Beitrag zur Hiatushernie). *Deutsche med. Wochenschr.*, 1932, 11, 1391.

The authors, who have operated upon 7 para-oesophageal diaphragmatic herniæ, 6 traumatic diaphragmatic herniæ, and 1 congenital hiatus hernia (malformation with shortened oesophagus), report a study of the problem of the so-called hiatus hernia. In connection with the researches of Åkerlund, Öhnell, Barsony, and Berg, Knothe demonstrated roentgenologically 300 hiatus herniæ in patients seen at the Bergmann Clinic in the period of a year. At the moment the opaque fluid entered the lower third of the oesophagus there were seen above the diaphragm, with the patient in the dorsal position, sharply circumscribed shadows varying in size from those which were quite small to those the size of the palm of the hand. These were interpreted by Knothe and others as gastric shadows produced by the temporary pulling or pushing up of the stomach with the anatomical cardia as the result of pathological changes in the hiatus. In the presence of regressive changes at the hiatus, a so-called "traction luxation" (Bergmann) occurs because of axial contraction of the oesophagus.

The authors believe that even in the presence of insufficiency of the hiatus, displacement of the stomach into the thorax in the sense of herniation is hardly possible as mobility is limited by the firm muscular attachments between the diaphragm and oesophagus. Anatomical investigation has shown that a special anchoring of the hiatus is effected by a broad muscular layer of the diaphragm which has a tendinous insertion on the oesophagus and can be followed directly from the oesophageal musculature over into the diaphragm. Roentgenological studies have shown that on deep inspira-

tion in the dorsal position the opaque medium is shaken, and on prolonged inspiration it is driven upward into the lower portion of the oesophagus. This simulates the picture described by Knothe and occurs also in the presence of organic or functional changes in the cardiac region.

In support of the authors' view is the fact that when the oesophagus is empty the findings attributed to hiatus hernia are never produced even by contraction of the abdominal or respiratory muscles or a change in the position of the body. The shadows first become visible after filling from above. Under continuous roentgen control with serial roentgenography, the stomach filled with an opaque medium never shows the described projections above the diaphragm even when water and soft bread are added. The stomach filled with contrast material never rises above the diaphragm.

The shadows interpreted as gastric were those of the dilated oesophagus which during expiration emptied itself in 2 stages. Accordingly, they were due to suprarenic dilatations of the oesophagus. Moreover, the less frequently observed apparent projections of the cardiac portion of the stomach above the diaphragm are not herniæ, but protrusions in the dome of the elevated diaphragmatic oesophageal muscle. Whether disturbances of the cardiovascular system can develop either directly or indirectly from these conditions as from para-oesophageal defects seems questionable. However, the researches of Åkerlund, Barsony, Berg, and Knothe have given us new knowledge concerning the behavior of the cardiac oesophageogastric portion during the act of swallowing.

The article contains schematic drawings and roentgenograms of the hiatus region and is supplemented with a bibliography.

RUEDEL (Z)

Cimino, S. Bacteriological Researches in the Associated Syndromes of the Right Side of the Abdomen (Ricerche batteriologiche nelle sindromi associate dell'addome destro). *Polidin*, Rome, 1932, xxxix, sez. chir., 721.

Cimino undertook a series of bacteriological investigations in the cases of sixty patients with symptoms referred to the right side of the abdomen. Acute or chronic appendicitis was present in all and in many was associated with cholecystitis or peptic ulcer or both. Bacteriological examinations were made of the appendix, peritoneal adhesions, and peritoneal fluid, and of lymph nodes from many different parts of the abdomen but especially from the ileocecal, mesenteric, omental, and gastric regions. The author studied also the immunological reactions of the patients' sera to the bacteria isolated.

Bacteria were isolated in fifty-seven of the sixty cases. The greatest number of positive cultures were yielded by the ileocecal glands. Glands from the lesser curvature of the stomach were always sterile. Peritoneal adhesions and peritoneal fluid frequently yielded positive cultures.

whereas the icterus index and the coagulation time either decreased or remained stationary.

The results show also that the bile is an irritant to the liver and in obstructive jaundice is a stimulus to the formation of more fibrinogen by the liver.

The considerable increase in the fibrinogen content of the blood which occurred just before death may have been due to concentration of the plasma by dehydration.

The fluctuation of the coagulation time coincided with that of the degree of icterus. The increase in the icterus index is self-explanatory. The decrease in the icterus index after the first week was probably due to the destruction of liver cells.

Deficiency of calcium in the serum should not be considered a causative factor in the production of hemorrhage in obstructive jaundice. The results of investigations reported in the literature indicate that a deficiency of calcium is not constant in jaundice and is not directly concerned in prolongation of the coagulation time.

The theory that heparin is a cause of the bleeding has not been proved by clinical or experimental observations. The investigation herewith reported demonstrates that bile causes destruction of the hepatic parenchyma, and the possibility that heparin is increased in the blood in obstructive jaundice is admitted.

In practically all of the determinations the coagulation time remained above the normal limits. It is not a satisfactory index of a hemorrhagic tendency in the presence of jaundice.

In conclusion the author states that as yet there is no adequate proof that any one factor is alone responsible for the hemorrhage.

NEWMAN C. BULLOCK, M.D.

Boshamer, K.: The Nature and Prevention of Auto-intoxication in Acute Pancreatic Necrosis (Art und Verhütungsmöglichkeiten der Autointoxikation bei der akuten Pankreasnekrose). *Arch. f. klin. Chir.* 932, cited, 574.

Acute pancreatic necrosis which, after developing suddenly causes severe manifestations in the abdomen and circulation has still a mortality of over 50 per cent in spite of all efforts to combat it and in spite of earlier operations. Therefore, a continued search is being made for a method of treatment that will fix the toxic substances and permit their removal.

All experiments to obtain a passive immunity have been, and will probably always be, unsuccessful. Therefore a more favorable prognosis can be expected only when it is possible to diminish the effects of the toxin of pancreatic necrosis.

From his extensive studies the author concludes that the fatal termination of pancreatic necrosis depends on an auto-intoxication with the specific pancreatic ferment, trypsin, and that the point of attack of the substance is the reticulo-endothelium of the abdominal cavity. However this toxicosis is dependent upon the presence of protein-decom-

position products damaging the cells to such a degree that the ferment can become active. On this theory regarding the nature of the intoxication and the point of attack of the toxin, various therapeutic measures to suppress the toxicosis have been based. However, only one, which aims to hinder the penetration of trypsin into the cells, is of practical value.

The remedy which the author has found to be useful in animal experiments is heparin given intravenously in doses of 0.3 repeated several times. As heparin causes a rapid, transitory lowering of the blood pressure he injects epithalon (ephiphala) simultaneously. This treatment was successful also in two cases of severe pancreatic necrosis in human beings.

In the procedure recommended by the author a laparotomy with exposure and drainage of the pancreas in the usual manner is first performed. After the operation a continuous intravenous drop infusion of Ringer's solution is given, and through the cannula, at intervals of two, three, and four hours, 0.3 of heparin and 1 ccm. of epithalon are injected.

In the first case the patient received 3 g of heparin and 7 ccm. of epithalon in forty-eight hours, and in the second case 2.0 of heparin and 6 ccm. of epithalon in thirty-six hours.

Unfortunately the price of heparin is very high, 60 marks per gram.

NEUBERG (H).

Silberberg, M.: End Results of Splenectomy in Hemolytic Icterus (Ueber das Dazwischenwischen der Splenektomie bei hämolytischen Ikterus). *Arch. f. klin. Chir.* 932, cited, 581.

The author reports four cases of hemolytic icterus in which splenectomy was performed. One of the patients died on the second postoperative day from thrombosis of the portal vein, but the three others withstood the operation and were in excellent condition four and a half years, five years, and one year later respectively.

The first case was that of a girl twenty-seven years of age. Before the operation the erythrocyte count was 2,900,000, the leucocyte count was 7,000 and the hemoglobin amounted to 45 per cent. In the differential white cell count the immature cells amounted to 4 per cent, the cells with rod shaped nuclei to 34 per cent, the cells with segmented nuclei to 34 per cent, the lymphocytes to 8 per cent, the monocytes to 7 per cent, and the basophils to 1 per cent. Marked anisocytosis and polychromasia were present. In the fragility test the osmotic resistance of the erythrocytes was found to be diminished, hemolysis began at 0.6 per cent. Four and a half years after the operation the erythrocyte count was 4,600,000, the hemoglobin amounted to 55 per cent, and the osmotic resistance was unchanged hemolysis began at 0.55 per cent.

The second case was that of a woman twenty-four years of age. Before the operation the erythrocyte count was 3,000,000, the leucocyte count was 7,300, the hemoglobin amounted to 55 per cent, and the

GYNECOLOGY

UTERUS

Frankl, O., and Ringer, M. Benign and Malignant Polyps of the Cervix (Ueber gutartige und bösartige Cervixpolypen) *Zentralbl f Gynaek*, 1932, p. 1858

Frankl undertook the re-examination of 318 polyps of the uterine cervix. One hundred and thirteen of the polyps were covered by squamous epithelium or contained unusual glands. Eighty-two patients were re-examined six months or longer after removal of the polyps. In not a single instance was the original diagnosis of "benign growth" subsequently disproved by the development of cancer. The squamous epithelial covering and hyperplasia of the glands, which are yet mistaken for carcinoma, were clearly shown in various cases. The squamous epithelial covering of the cervical polyps was not interpreted as evidence of metaplasia. In a few patients the co-existence of cervical polyps and cervical cancer was suspected, as well as the occurrence of cancer in the form of a polyp and carcinomatous degeneration of a polyp. Attention is called to the not infrequent difficulty in the diagnosis, and illustrative cases are cited. The author believes, however, that experience will overcome these difficulties and can be acquired by study.

As polyps may be multiple and may recur, the patients should be instructed to return if there is a recurrence of bleeding. Even though cancer of the cervix is present in only 1 per cent of women with cervical polyps, the external os should be examined carefully in every case in which a cervical polyp is found.

Intelligent treatment of patients with polyps requires the coöperation of an experienced clinician with a well-trained pathologist.

ROBERT MEYER (G)

ADNEXAL AND PERIUTERINE CONDITIONS

Turunen, A. O. I. Two Cases of Torsion of the Normal Adnexa (Zwei Fälle von Torsion der normalen Adnexe) *Acta obst et gynec Scand*, 1932, XII, 405

The first case reported by the author was that of a primipara thirty-eight years old. For three days the patient had had attacks of severe pain on the left side of the abdomen associated with vomiting and symptoms of peritoneal irritation. The symptoms began shortly before menstruation after she had been scrubbing floors. At operation a tablespoonful of blood was discovered in the abdominal cavity and the left adnexa were found twisted one and a half times from left to right. The left ovary was larger than a hen's egg and

bluish-red. The tube was almost as thick as a finger, and blood welled from the abdominal ostium. Microscopic examination showed no other changes in the ovary or tube than those caused by the torsion. The right adnexa were normal.

The second case was that of a primipara thirty-five years old who for three months had had slight pains in the right side of the abdomen and symptoms of internal hæmorrhage. The pains began during menstruation. At operation the right adnexa were found adherent to the small intestine and twisted one and a half times from left to right. The left adnexa had been extirpated previously because of a tubal pregnancy. The right ovary was the size of a hen's egg and bluish-red. As in the first case, microscopic examination disclosed no changes except those caused by the torsion.

In a review of the literature the author found the reports of sixty-two cases of torsion of normal adnexa. Among these there were only 19 in which torsion of an ovary and tube took place simultaneously. In none of these cases was a correct diagnosis made before operation. The most important conditions to be ruled out in the differential diagnosis are ectopic pregnancy, appendicitis, and torsion of the pedicle of a small ovarian tumor. Ectopic pregnancy was suspected in the author's cases and in six of those of non-pregnant women which were reported in the literature. In cases of torsion, hæmorrhage in the abdominal cavity is common, but external bleeding through the genital organs does not seem to occur. This observation may be of aid in the differential diagnosis from extra-uterine pregnancy, in which a considerable length of time has elapsed since the initial attack of pain. Confusion of the condition with appendicitis may be avoided by bimanual examination. Differentiation from torsion of the pedicle of a small ovarian tumor is more difficult.

MISCELLANEOUS

Zuckerman, S. The Comparative Physiology of the Menstrual Cycle. *Brit M J*, 1932, II, 1093

Research on reproduction owes its remarkable progress in the past fifteen years chiefly to a method based on combined histological and experimental observations. By this method the œstrus cycles of many mammals have been elucidated and the various reproductive hormones have been discovered and isolated. Unfortunately the method is not applicable to human beings, and the difficulty of obtaining proved normal material from the human uterus and ovaries for histological study and the impossibility of conducting experimental research regarding the human menstrual cycle have prevented agreement

Mentioned in order of decreasing frequency the organisms found were the bacillus coli, staphylococci, streptococci pneumococci, enterococci tetraocci, and bacillus paratyphosa.

Specific immunological reactions were obtained in fourteen of thirty-six cases studied.

The author discusses the general course of the abdominal lymphatics and reviews the various theories regarding the rôle of acute and chronic appendicitis in the pathogenesis of gall-bladder disease and peptic ulcer. PETER A. ROSE, M.D.

Lewis, F. L.: Pneumoperitoneum Following Laparotomy. *Canadian M. Ass. J.* 933 xlviii, 2.

In forty cases in which a laparotomy was performed the author made postoperative roentgenographic studies to determine whether or not air was present in the peritoneal cavity. In twenty-five of the cases the operation was done under spinal analgesia and in fifteen under anesthesia induced with nitrous oxide and oxygen or ether.

Air was found in the peritoneal cavity in ten (40 per cent) of the cases in which the operation was performed under spinal analgesia, but in only 1 (13.3 per cent) of those in which it was done under general inhalation anesthesia.

The author attributes the higher incidence of pneumoperitoneum following spinal analgesia as compared with general inhalation anesthesia to the fact that during spinal analgesia the abdominal wall is markedly relaxed, the intra-abdominal viscera tend to fall away from the abdominal wall, and respirations are more shallow.

Clinically it was difficult to demonstrate absence of liver dullness and the presence of air. With the patient in the upright position the air bubble was usually discovered beneath the right hemidiaphragm. If a considerable quantity of air was present, it was found beneath both leaves of the diaphragm. When spinal analgesia was supplemented by general anesthesia and when there was straining during the operation, no air remained in the peritoneal cavity. As all of the patients operated upon under spinal analgesia were kept in the Trendelenburg position it was thought that this may have played some rôle in the development of

the pneumoperitoneum. In the only case in which the patient complained of pain, the pain was in the right hypochondrium. Of the twelve patients with air in the peritoneal cavity after the operation, one developed postoperative collapse of the lung.

As a rule the air is absorbed in from ten days to 6 weeks, but sometimes it persists for as long as from four to six weeks. Absorption is believed to be favored by having the patient lie flat in bed or by elevating the foot of the bed. The presence of air beneath the diaphragm may suggest a subphrenic abscess. ALTON OWENS, M.D.

Muller, G. P., and Rademaker, L. A.: The Rôle of Infection in the Production of Postoperative Adhesions. *Arch. Surg.* 933 xvi, 266.

The authors undertook experiments to determine the rôle of infection in the production of postoperative adhesions. They used thirty guinea pigs with an average weight of 500 gm. Under precautions for sterility a piece of gauze 0.5 cm. square and four layers thick was placed against the peritoneum. In ten of the animals dry sterile gauze was used, in another ten, gauze saturated with tincture of iodine, and in the third ten, gauze saturated with a twenty-four-hour broth culture of colon bacilli. The animals were killed after from eight weeks to three months. In those in which plain sterile gauze was used no adhesions were found. Of those in which iodized gauze was used, only one showed adhesions. Of those in which colon bacilli were embedded, infection and extensive adhesions occurred in six, no wound abscess developed in two and moderate abscesses which were healing were found in 2. The authors state that these results are in agreement with the theory that infection is responsible for the production of adhesions.

In an analysis of forty-two cases in which operation was done for postoperative adhesions it was found that in thirty-five cases drains were used. This indicates that infection was present previously or was carried into the abdominal wound by the drain. Of the seven cases in which the abdomen was closed without drainage the follow-up record showed that wound infection was present in six.

MAURICE E. LACROIX, M.D.

as in many other features, primates thus fail to exhibit the apparent specialization which characterizes mammals of all other orders

HARRY W. FINE, M.D.

Ortmann, K. K. Carcinoma of the Female Genitalia in Children (Ueber Carcinom der weiblichen Genitalien bei Kindern) *Ztschr f Krebsforsch*, 1932, xxxvii, 283

A child of one year was brought for treatment because of sudden severe bleeding from the vagina. There was nothing unusual in its own or its family history. Polyps which were considered benign on histological study were removed repeatedly and their sites cauterized.

At the age of one and one-half years the child was again brought to the clinic. She was in good general condition and had had no particular trouble except tenesmus of the bladder and bowel. The specimens which were removed from the nodule-studded vagina, particularly from the posterior wall, showed strands and nests of large polymorphous cells with clear nuclei and numerous mitoses arranged in a loose embryonic connective tissue, a definitely infiltrative growth, papillary structures here and there, a few glands, a few round cells, and some areas of necrosis. In the loose connective tissue there were denser, star-shaped lines of elongated cells with dark nuclei.

Electrocoagulation was done. Five weeks later there was a larger vaginal tumor which presented the same histological picture as the previous growth. After roentgen treatment this tumor disappeared with the exception of a fixed area of infiltration the size of a pea in from ten to twelve days. A few weeks later it recurred in the form of small nodules in the rectovaginal septum. These were found after the child's death from pyelitis.

The author reviews the cases of genital carcinoma in children which have been reported in the literature. Among these was one case of vaginal carcinoma. Bleeding from the vagina in children is of great significance. The prognosis is very grave in spite of the statistics of Quensel and Wildbote, which show that the malignancy of cancer is no greater in children than in adults. The treatment should consist of irradiation with radium or the X-rays.

ROBERT MEYER (G)

Condamin, F., and Arnulf, G. Treatment of the Neuralgias of Pelvic Cancer by Neurolytic Injections (Traitement des névralgies des cancers pelviens par les injections neurolytiques) *Re de chir*, Par., 1932, li, 635

This article is based on a study of twenty cases of severe neuralgia due to pelvic malignancy. The consistently good results obtained and the simplicity of the method employed cause the authors to recommend their method of treatment as a routine procedure in such cases.

Others have recommended chordotomy and section of the posterior nerve roots for the relief of

neuralgias due to pelvic malignancy, but the authors believe that such extensive procedures should be considered only after neurolytic injections have failed. Resection of the presacral nerve is an abdominal procedure and is not indicated if the pain radiates down the legs. It may be a wise compromise measure when the abdomen is opened in cases of inoperable, extensive uterine cancer as it should relieve the patient of much subsequent suffering.

To obtain good results with neurolytic injections it is absolutely essential to determine the topographical distribution of the pain. The authors classify neuralgias associated with pelvic cancer into three groups and outline the treatment as follows:

1. Pain limited to the pelvis with or without radiation to the buttocks and the posterior side of the thighs. Injection of the second sacral nerve, either unilateral or bilateral, depending on the condition, should stop the pain. In these cases complete cessation of pain has always been obtained.

2. Pain in the areas supplied by the lumbar and sacral plexus with characteristic radiation down both legs and sharp exacerbations at the level of the knees or on the anterior surface of the thighs. An injection, usually bilateral, should first be made in the second sacral nerve and after a study of the symptoms over a period of several days, such paravertebral injections as are necessary should be given. Injection of the second and third lumbar nerves will control pain in the anterior part of the thigh and injection of the fourth and fifth lumbar nerves will stop pain in the anterior aspect of the knees.

3. A burning sensation in the perineum and anus with tenesmus. Injection in the fourth and fifth sacral nerves and epidural injection are equally effective. Dilatation of the anus is also of benefit.

The authors inject Sicard's mixture, which consists of 20 ccm of 94 per cent alcohol, 10 cgm of menthol, and 20 cgm of novocain. They describe in detail how and where to make the injections and call attention to the fact that the puncture should provoke an exacerbation of the neuralgia which is to be relieved. If there is no flare-up of the old pain, an error has been made in the analysis of the pain or in the technique and the disturbances should be reconsidered before the injections are continued.

As a rule 4 or 5 ccm of the solution are injected so as adequately to surround the nerve. Such injections cause very severe pain, but it is momentary and can usually be anticipated by giving a few whiffs of a general anesthetic. The relief following successful injection is immediate and complete.

The authors report their twenty cases briefly. Failures and difficulties are attributed by them to (1) inaccurate observations of the topographic distribution of the pain, (2) failure to inject the nerve itself or its immediate vicinity, and (3) lack of cooperation on the part of nervous patients, especially those addicted to the use of morphine.

There have been no accidents due to neurolytic injections. Paralysis of the lower extremities and retention of urine have been transient.

concerning many problems that must be solved before a profitable comparison can be made between human and other mammalian mechanisms. Formerly this problem was considered to be of only academic interest, but with the advent of preparations such as estrin and hormones of the anterior lobe of the pituitary gland that are ready to be applied in clinical medicine the question of the homology of the menstrual cycle became of distinct practical importance. The common sources of supply of reproductive hormones used in laboratory practice are the human placenta and human urine. The biological properties of the substances extracted from them are determined by experiments on lower mammals. The attempt to apply these substances in morbid conditions in the human being should be rational so far as possible, and not experimental. To attain this ideal, full consideration must be given to the similarities and differences between the menstrual cycle and the estrus cycles of lower mammals.

In approaching the question of homology it must be remembered that not only man but also all of the Old World primates which have been studied have a menstrual cycle, and that our knowledge of the menstrual cycle has been considerably advanced by the study of apes and monkeys. This fact raises the question whether or not the cycles of all primates can be regarded as of the same type. The common characteristic of all is bleeding from the uterus approximately every four weeks. However there are certain rather gross differences. For instance, some of the Old World primates have a specialized skin about the external genitalia which swells or becomes red or both at regular times in the cycle. Other Old World primates, including man, do not exhibit such changes, the only external physical manifestation of their cycle being the menstrual bleeding. Baboons and chimpanzees are examples of primates that manifest activity of a sexual skin.

In these animals menstruation occurs about every thirty days. Immediately after its onset the skin about the external genitalia becomes red and swollen. The change reaches its maximum before the middle of the cycle. It then recedes and the skin assumes its normal appearance until the onset of the next period. In baboons the swelling may assume a size one-eighth of the size of the trunk of the animal. It has been shown that the skin phenomenon is an estrin reaction like the vaginal cornification in the mouse. It has been found also that sexual activity varies with the degree of the skin reaction, female baboons being more receptive during the period of swelling than at other times. For comparative purposes it may be assumed that in primates which do not show external changes in a sexual skin the estrus-producing hormone is active during the same period, namely the first two weeks following the onset of menstrual bleeding. This period may be called the "follicular" or "estrus" phase of the menstrual cycle.

In the non-primate mammal the follicular phase of the estrus cycle ends with ovulation. The corre-

sponding phase of the menstrual cycle is no exception, for it is generally believed that ovulation occurs normally about two weeks before the onset of menstruation, at the time when the abrupt decrease in sexual skin activity indicates that the phase is coming to an end. Evans and Swery recently questioned this view and attempted to prove that primate ovulation occurs at all periods of the cycle.

From a study of the sexual skin phenomena the author has come to the conclusion that in man and subhuman catarrhine primates ovulation occurs normally at about the middle of the cycle. He believes that the sexual skin phenomenon is the most valuable sign with reference to ovulation.

In the interpretation of the menstrual cycle, two separate but overlapping problems can be distinguished. The first concerns the physiological events which determine menstruation, and the second the relation between the rhythmical phases of the menstrual cycle and those of the estrus cycles of the lower mammals.

In the author's opinion the most logical theory regarding the physiology of menstruation is as follows.

The anterior lobe of the pituitary gland controls the ovarian cycle and stimulates the production of ovarian hormones. Its effect is cyclically interrupted or decreased at intervals of somewhat less than four weeks. The ovarian secretions produce changes in the endometrium. Their action is interrupted or decreased subsequent to the withdrawal of the stimulus of estrin alone and varies in cycles. At ovulation, subsequent to the withdrawal of both estrin and luteal secretions.

The physiology of menstruation is constantly related to the connection between the rhythmical phases of the menstrual cycle and those of the estrus cycle. Granted that there is some connection between the two what are the possibilities? One is that the two may be identical. This is the view of Hartmann. Another is that the menstrual cycle represents only one of the two phases of the estrus cycle. Strong evidence against this view is the fact that menstruation may occur without previous ovulation and the formation of a corpus luteum. A third possibility regarding the relation between the menstrual and estrus cycles is that both consist of two phases, but in different combination. The author believes that the main difference between the menstrual cycle of the primate and the estrus cycle of the lower mammal is in the distribution of their respective follicular phases, this term being used to mean the period in which the follicular hormone (estrin) functions. If this theory is correct, the differences in sexual behavior between primates and lower mammals largely reflect different sexual physiological mechanisms of these animals. The mating or estrus phase of the lower mammal is generally brief whereas that of the primate persists throughout the entire cycle in agreement with the continuous action of the follicular hormone, but varies in frequency according to the variation in the activity of that hormone. In their sexual behavior

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Moore, G. E. Roentgen Measurements in Pregnancy, A Few Practical Methods and a Simplified Procedure Used by the Author *Surg., Gynec. & Obst.*, 1933, lvi, 101

The author has devised a modification of the Thoms method of measuring the pelvis in pregnancy which he states is simple and practical enough for use by any obstetrician. The technique may be described briefly as follows:

The point of the spine at the upper border of the fifth lumbar vertebra which was referred to by Albert in 1899 is located and a small piece of adhesive tape placed over this region. A line drawn from that point through the superior border of the symphysis pubis passes through the plane of the inlet of the pelvis. The patient is placed in a semi-recumbent position with the pelvis centered over the crosslines on the surface of the Bucky diaphragm. The distance from the adhesive tab to the Bucky diaphragm is determined with the use of calipers, and the distance from the superior surface of the symphysis to the Bucky diaphragm is determined with a ruler. The patient is adjusted so that these two measurements correspond, the plane of the inlet then being parallel with the film. The tube is centered to correspond to the crosslines of the Bucky diaphragm at a focal film distance of 30 in., and an exposure of the pelvis is made. The patient is then removed from the table, the author's lead scale is placed in the same plane as the pelvic inlet with the use of the measurements mentioned, and, with the Bucky diaphragm running, a short exposure is made to superimpose the scale on the film.

The pelvimeter consists of a lead sheet $1\frac{1}{16}$ in. thick and measuring 16 by 19 in. which is held firmly to a basswood board of the same size by screws. The board is $\frac{1}{2}$ in. thick and is fitted with legs. The pelvimeter is lowered or raised by thumb screws.

On the lead sheet a line running in the longitudinal center of the plate intersects a transverse line at right angles at the center of the plate. By the use of a small sewing needle two holes 10 cm. apart are made in the former line and equidistant from the intersection with the latter line. When an exposure of this scale is made on the film, two small dots in the region of the pelvic inlet are reproduced.

Moore and Skinner proved that when a perforated lead plate such as the Thoms plate is placed between the focal point of an X-ray tube and a film, the lead plate being parallel with the film, the spaces between the dots reproduced on the film when an exposure is made will all be equally distorted and will be the same whether they are near the center or near the periphery of the film. Therefore the two dots on the

film represent the proportionate distortion for all measurements made on that particular film.

To make the measurements it is necessary only to have a ruler that can be distorted in the same proportion as the two dots on the film. Such a ruler has been made of flexible and uniform rubber. A normal centimeter scale 10 cm. long is printed on it. A frame is constructed to hold the rubber ruler firmly. One end of the ruler can be extended to any desired distance and held in position by a thumb screw. To take measurements of the pelvic inlet on a film it is necessary only to extend the ruler until the zero mark and the 10-cm. mark are the same distance apart as the two dots on the film. One then has an equally distorted ruler on which each centimeter is distorted an equal amount and the pelvic measurements can be made directly on the film in the same way as measurements would be made with the use of a ruler.

This procedure is simple as well as accurate. The fact that only two dots are necessary makes the construction of the pelvimeter very accurate and easy. In cephalometry the scale is superimposed in the same plane as the region of the head to be measured.

ROWLAND M. EESTRAND, M.D.

Rowland, V. C. The Anæmia of Pregnancy Its Relation to Anæmia in General *J. Am. M. Ass.*, 1933, c, 537

Rowland discusses two types of anæmia of pregnancy, the hyperchromic and the hypochromic. He states that anæmia of some degree is frequent in pregnancy and associated with a food deficiency. When untreated, the pernicious form of anæmia has had a mortality of 65 per cent. The secondary form, by lowering resistance, predisposes the patient to infections and thus increases morbidity.

The pernicious or hyperchromic form of anæmia, while rare, was found in six of twenty-eight cases of anæmia in pregnancy reviewed by the author. It has an insidious onset and is characterized by antepartum weakness, dyspnoea, palpitation, dizziness, headache, and some degree of oedema of the feet. It may be associated with a definite toxæmia and therefore may be overlooked. In cases of such anæmia labor may be premature and is short and painless. Postpartum bleeding is scant. The child may be born dead. A living child does not share the anæmia, but develops normally. During delivery the mother may collapse. Convalescence occurs promptly, but during the first two weeks of the puerperium the condition may progress. The anæmia is of a hyperchromic macrocytic type similar to Addisonian anæmia. The author concludes that it is due to temporary loss of the intrinsic factor of gastric digestion. Liver extract is specific.

Theoretically accurate neurolytic injections should relieve the pain for from twelve to eighteen months, a period of time which as a rule is sufficiently long to permit the patient to die without severe suffering. However as cancer is a progressive disease, repetition of the injections every two or three months is quite often necessary. GEORGE H. GARDNER, M.D.

Newell, O. U: Injury to the Ureters, Including Accidental Ligation During Pelvic Operations. *Am. J. Obst. & Gynec.*, 1935, xxv, 230.

From the large number of cases of ureteral injury reported it is evident that the occurrence of such injuries during operations is far more common than is generally believed. No doubt some unilateral ligations occurring in pelvic operations are unrecognized, the ultimate result being death of the kidney on the corresponding side. Ureteral injury is liable to occur in almost any pelvic operation, but is most common in radical abdominal and vaginal hysterectomies. As a rule it is unilateral, but in a number of cases both ureters have been involved. The most common sequelae of ureteral injury are vaginal and abdominal fistulae. In some cases the injury is fatal.

Prevention of such injuries is most important. When the ureter is seriously injured by a ligature or clamp immediate repair should be done by uretero-ureteral or ureterovesical anastomosis. When a

bilateral occlusion is discovered a few days after an operation, removal of the ligatures is indicated if the patient's condition can stand the strain of a serious operation. If not, nephrostomy with drainage should be done. Nephrostomy is a life-saving operation and should be performed in all cases of double ureteral obstruction in which the condition of the patient is grave.

Vaginal correction of a uterovaginal fistula is satisfactory. The procedure of choice is an abdominal operation consisting of ureteral anastomosis or nephrectomy. At operation to correct an injury of the ureter the effort should be made to preserve the normal ureteral and renal function.

In the discussion of this report, CASHMAN cited 1,419 supravaginal hysterectomies with 2 ureteral injuries and 110 vaginal hysterectomies with no ureteral injury. In the cases reviewed, total hysterectomy was done 4 times as often as in Newell's series. Cashman said that total hysterectomy is correct in principle as it effects the removal of the diseased cervix, but this can be accomplished in a much more simple manner by thoroughly cauterizing the cervix and performing a supravaginal hysterectomy. In some of the 1,419 cases of supravaginal hysterectomy cited (in all of which the operation was performed in this manner) did carcinoma develop. EDWARD L. COONILL, M.D.

version In about two-thirds of the cases in which a lateral border of the uterus was ruptured, the rupture was caused by trauma In 1 case the uterus was completely separated from the cervix Colporrhexis alone or complicating uterine tears occurred in 13 per cent of the cases Complete rupture occurred most often spontaneously whereas incomplete rupture was caused most often by trauma

The author favors conservative treatment when the patient is in shock, but considers laparotomy definitely indicated when hæmorrhage is otherwise uncontrollable or delivery of the fetus through the vagina is impossible He states that when hysterectomy is indicated the cervix should be removed with the uterus In expectant treatment measures should first be taken to combat shock The fetus should then be delivered in whatever manner is possible and the rent in the uterine wall packed Prolapsed intestine should be carefully replaced before the packing is done

The mortality in the cases reviewed was 55 per cent Ninety-eight per cent of the deaths were due to shock and sepsis, and only 2 per cent to hæmorrhage

HENRY S ACKEN, JR, M D

Giarotta, G A Case of Partial Adherence of the Placenta (Una osservazione di placenta accreta partialis) *Folia gynaecol*, 1932, *xxx*, 269

The case reported by the author was that of a multipara aged thirty-three years who, at the end of her seventh pregnancy, was delivered spontaneously, but was unable to expel the placenta and had a severe postpartum hæmorrhage Manual removal of the placenta was attempted, but on the anterior surface of the uterus it was impossible to separate the placenta from the uterine wall As the hæmorrhage continued in spite of tamponade of the uterine cavity, supravaginal hysterectomy was done The postoperative course was uneventful

Examination of the resected specimen showed that the placenta was intimately adherent to the anterior uterine wall by large cotyledons Its separation was impossible The entire anterior wall of the uterus corresponding to the site of insertion of the placenta was very thin, in some places being reduced to a thickness of only 2.5 mm

Histological examination showed complete absence of the decidua basalis in the area of abnormal adherence of the placenta The decidual elements were deficient and irregularly distributed in the muscle layers The placental tissue possessed a notable property of penetrating between the muscle fibers Between the placenta and the uterine wall there was a layer of fibrinoid tissue in which decidual and chorionic elements were found

The thinning of the anterior wall was due to hyaline degeneration of the muscle fibers The connective tissue was increased somewhat more than was necessary for replacement of the degenerated muscle, but there was no evidence of marked connective tissue hyperplasia There was no perivascular infiltration

The author discusses the various theories regarding the pathogenesis and reviews the classical features of adherence of the placenta

PETER A ROST, M D

PUERPERIUM AND ITS COMPLICATIONS

Albanese, A A Clinicostatistical Contribution on the Treatment of Late Puerperal Hæmorrhage (Contributo clinico statistico alla terapia delle emorragie tardive del puerperio) *Riv ital di ginec*, 1932, *xiv*, 465

Late hæmorrhage of the puerperium has been described as occurring from three to fourteen or more days after delivery The causes of such hæmorrhage are variable Causes associated with pregnancy include multiple pregnancy, frequent pregnancy, polyhydramnios, and an unusually large fetus, all of which may produce relative atony of the uterine muscle after overdistention Anomalous insertion of the placenta may result in local atony Extrinsic causes include an abnormally and continuously filled urinary bladder which impedes contraction of the uterus, and poor evacuation of the bowels Abnormal positions of the uterus may result in considerable venous stasis and lead to a vicious circle consisting of subinvolution, lack of muscular contraction, and more venous stasis Submucous fibroids especially predispose to hæmorrhage Among other causes are malignant tumors, arteriosclerosis, varices, aneurisms, inversion of the uterus, puerperal infection, and secondary hæmorrhage from lacerations of the cervix

The most common cause is probably retention of the placenta Why one or two cotyledons should remain fixed has not been determined The theories of Beckmann, Frankel, and others regarding this question are reviewed

Albanese reports the case of a woman forty-one years of age who was subjected to subtotal hysterectomy because of repeated uncontrollable hæmorrhages He then reviews 11 cases of late puerperal hæmorrhage which were included among 13,993 obstetrical cases seen in the period from 1927 to 1931 The hæmorrhage appeared from five to thirty days after delivery In most instances the preceding period was apparently normal although the hæmorrhage was severe The usual treatment consisted in the use of oxytocics, curettage, or hysterectomy In all but one of the eleven cases reported curettage was done Ten of the patients were cured and 1 died from sepsis

A. LOUIS ROST, M D

Williams, J T The Relation of Respiratory Infections to Puerperal Infection *J Am M Ass*, 1932, *xcix*, 1991

The incidence of puerperal infection was studied in the obstetrical and gynecological service of the Boston City Hospital over the five-year period from 1926 to 1930, inclusive, and compared with the incidence of respiratory diseases in the City of Boston during the same period The hospital

The hypochromic or secondary type of anemia is also common in pregnancy. It is associated with hypochlorhydria and dietary deficiencies. The treatment consists of the administration of iron.

In conclusion Rowland states that prenatal care should include examination of the blood and, if any degree of anemia is found, regulation of the diet and medication to correct it. He believes that if these precautions are taken the maternal mortality and morbidity will be reduced.

CLEMENT C. DOWNEY, M.D.

Solomon, B.: Some Phases of the Toxemias of Pregnancy. *Am J Obst. & Gynec.*, 1932, XIV, 72.

The cause of the toxemias of pregnancy is still unknown. If theories as to causation are to be of assistance, their clinical application must be followed by successful results. The theories attributing eclampsia chiefly to the effect of food and placental toxins seem to be valid as they conform to this rule. If the women receive prenatal care they will usually survive. If they do not receive such care, any treatment may fail as cerebral hemorrhage may occur. Of eight deaths in the author's cases, five followed cerebral hemorrhage and two followed puerperal sepsis.

The varieties of toxemia are numerous. The most common manifestations are albuminuria with marked toxic symptoms, eclampsia, eclampsia, hyperemesis, and accidental hemorrhage.

Prenatal care must be insisted upon. However, even though it will improve the results, there will still be some mortality. A simple and valuable test for liver involvement is the Fouchet test.

The nomenclature of eclampsia should be decided upon at an international congress.

The results of an investigation of the eye in toxemia are reported.

Solomon says that in the evaluation of statistics on hyperemesis gravidarum an investigation should be made to determine whether the diagnosis was correct in the cases upon which the statistics were based. In some cases the condition can be cured only by evacuation of the uterus. Sometimes this can be done gradually but at other times it must be immediate. Toxicemic accidental hemorrhage is nearly always curable if it is treated as soon as it is diagnosed.

The author reviews the cases of toxemia of pregnancy seen during a period of five years at the Rotunda Hospital, Dublin, and gives the mortality of eclampsia, eclampsia, accidental hemorrhage and hyperemesis gravidarum.

EDWARD L. CORRELL, M.D.

Paramore, R. H.: The Hepatic Lesions. *J. Obst. & Gynec. Brit Emp* 1931, XXXI, 777.

Paramore advances a theory regarding pre-eclamptic toxemia which is based on the assumption that intra-abdominal pressure regulates the general metabolism by directing the rate of flow of blood from the abdomen to the heart. He states

that in late pregnancy an increase in this pressure interferes with the normal flow and that a rapid increase in the size of the uterus at any time may have a similar effect. In this way is created a disturbance of both kidneys and liver the first effects of which are noted in the capillaries. In the liver some of the capillaries are compressed and others are dilated, the normal function of the organ being consequently disturbed and the blood insufficiently changed. The author describes the structure of the liver and shows that the changes found therein in eclampsia are sufficient to support his theory. He out the postulate of the presence of unknown toxins.

He believes that in cases of eclampsia with little visible pathological change in the liver there is a rushing of blood through dilated lobular capillaries. He claims that he has found such capillaries.

The classical treatment for eclampsia is effective because it tends to rid of the compression of the liver and check the rush of blood through that organ.

HENRY S. AUSTIN, JR., M.D.

Beaden, M. M.: The Value of Cesarean Section in Pre-Eclamptic Toxemia. *Brit. J. J* 1931, 4, 51.

The purpose of this article is to suggest that cesarean section might be performed to advantage more frequently in serious cases of pre-eclamptic toxemia. Beaden has observed that the high mortality following cesarean section performed after the development of eclampsia does not occur when the operation is performed in the pre-eclamptic stage. He has never had a maternal death in a case in which cesarean section was done for pre-eclamptic toxemia or in a case of more mild toxemia in which cesarean section was done for other reasons. He presents a table giving the indications for the operation and the outcome in thirty-one cases. CASES BY DARR, M.D.

LABOR AND ITS COMPLICATIONS

Mahkoun Bey N.: Rupture of the Uterus. *J. Obst. & Gynec. Brit Emp* 1931, XXXI, 743.

The author reports from Egypt a series of 110 cases of rupture of the uterus. He gives the incidence of this complication in cases of difficult labor as 3 per cent. Some of the predisposing causes are multiparity, individual susceptibility, the injudicious use of oxytocics, and faulty development and position of the uterus. Among the cases reviewed there was only one in which the rupture occurred in a cesarean section scar and none in which it occurred in the scar of a myomectomy. In over half of the cases large doses of pituitrin (from 1 to 3 c.c.) had been given by the midwife.

In 59 cases the determining cause was contracted pelvis with a neglected shoulder presentation, and in 8 cases a pendulous abdomen.

In 94 cases the rupture was complete. The location of the tear was determined largely by the causative factor. About 85 per cent of the tears occurred in the lower segment of the uterus. Many of them were produced by unwise attempts at

crease. Illegitimacy is only a minor factor in the causation of sepsis and fatal infection. In the cases reviewed, septic abortion and miscarriage were of importance in the incidence of puerperal sepsis and the mortality. Septicæmias caused more deaths than did gross pelvic infection or peritonitis. A previous puerperal sepsis may predispose to a more severe type of illness and to a fatal issue, but the statistics do not show whether it precipitates the infection itself.

The data suggest that in the medically attended confinements the risk of puerperal sepsis was increased and the disease was more likely to end fatally. However, it should be borne in mind that this group included all difficult and abnormal deliveries and those in which instruments were used either from choice or necessity. Moreover, at many of the confinements a doctor and midwife were present, and these included the majority of the medically attended cases. In most of these cases the woman was first examined by the midwife, the doctor being called only when a source of difficulty was discovered.

In the cases in which instruments were used the tendency toward fatal infection was increased. Moreover, the incidence of infection and the mortality were greater in cases of precipitate labor (under two hours) than in cases of prolonged labor. Broken placenta, manual delivery of the afterbirth, and the occurrence of hæmorrhage at this stage were not factors in the mortality.

The rapidity of onset of the disease was in many cases an index to the severity of the infection. The prognosis was made worse by prolonged delay in bringing the patient to the hospital.

As far as the most potent cause of death was aerobic streptococcal infection. Although a great variety of organisms may be responsible for the sepsis, the greater the severity of the disease the higher was the incidence of streptococcal infection. Of the fatal cases, streptococci were found in the local lesion in 73.5 per cent and in the blood in at least 76.2 per cent.

In discussing the treatment, Thomas reports the results obtained with Hobb's glycerine method. This method appeared to be effective only in local uterine infection.

The general measures of treatment included the use of substances with an antitoxic or antibacterial action, such as quinine, specific sera, and arsenical and mercurial preparations, substances stimulating bodily resistance to infection, such as vaccines and vitamins, and saline solutions to dilute the infection.

The author concludes that quinine was of only minimal value. Serum was of value only in certain types of infection and was not antibacterial. Arsenical preparations were not helpful, and as a rule caused pain and discomfort. Mercurial preparations did not have a favorable effect. Saline solutions were good adjuncts to other measures. Vitamins were of no special value. A. F. LASE, M.D.

NEWBORN

Puppel, E. Stillbirths, Early Infant Mortality, and Maternal Mortality in the Period from 1925 to 1931. A Clinical Study (Ueber Totgeburten, Frühsterblichkeit, und mütterliche Mortalität in den Jahren 1925-1931. Eine klinische Studie). *Arch. f. Gynæc.*, 1932, xl, 257.

In a review of 3,690 births the author found that 328 (3.8 per cent) of the infants died during the first ten days after birth, i.e., during the period of time the mother remained in the hospital. Infantile deaths due to malformations incompatible with life are not included. Almost 50 per cent of the infants born dead or dying early were born prematurely. In the cases of infants with a body length between 33 and 38 cm., the mortality was almost 98 per cent, whereas in the cases of 76 infants with a body length of from 30 to 42 cm. it was 57 per cent, and in the cases of 421 infants with a body length of from 42.5 to 47 cm. it was only 14 per cent.

In judging the management of labor, only cases in which the child died shortly before birth at term can be considered. In such cases the infant mortality dropped from 2.6 to 1.9 per cent, whereas the maternal mortality rose from 0.4 in the period from 1925 to 1927 to 0.8 per cent in the period from 1928 to 1931. The cause of the increase in the maternal mortality was an increase of difficult cases, especially cases of placenta prævia and eclampsia, with a consequent considerable increase in the frequency of cesarean section. The total mortality of the 223 cesarean sections, including Porro operations, amounted to 7 per cent. Among the cases in which cesarean section was done were several of appendicitis, rupture of the uterus, and hæmorrhage due to placenta prævia. The author is opposed to vaginal procedures, either version or hysterotomy, in the treatment of placenta prævia, whether the membranes are ruptured or not.

It is worthy of note that cranial hæmorrhage played a minor rôle in the infant mortality. Seven and seven-tenths per cent of the infant deaths were attributed to a birth injury. In cases of late birth the number of infant deaths was relatively high, constituting 1.8 per cent of the total number of stillbirths. The author discusses the difficulties in the diagnosis of delayed birth. Women with late delivery are usually older multiparæ. Following forceps operations the mortality was 1.3 per cent. Eight (one-third) of the infants who died following the use of forceps were carried beyond term. As cesarean section is accompanied by a considerable maternal mortality even in absolutely clean cases, it should be performed only when it is very definitely indicated.

The author discusses next the questions as to how the great frequency of premature births is to be explained and whether prophylactic measures might reduce it. Of chief importance in its reduction is a more extensive establishment of advisory stations for pregnant women. Because of economic condi-

patients came from the same geographical area as that covered by the Board of Health Reports. In Massachusetts, pneumonia, influenza, and septic sore throat are reported to the local board of health. The criterion for puerperal infection in the Boston City Hospital is the occurrence of a temperature of 101 degrees F or over during the first five days of the puerperium accompanied by subinvolution or tenderness of the fundus, a foul discharge, or other evidence of infection.

The curve of the incidence of puerperal infection rises during March and April, following closely the curves of the usual epidemic of respiratory diseases occurring in the late winter and early spring. A rise in June and July, although constant, was unexplained. The air throats, hands, and skin were considered carriers of the bacteria that caused both respiratory and puerperal infection, as an increase in respiratory infection was certain to be followed by an increase in puerperal infection.

Fifteen per cent of the infections followed cesarean section, 30 per cent, operative vaginal delivery and 55 per cent, spontaneous delivery. Therefore, although the spontaneous deliveries greatly exceeded the operative deliveries, nearly one half of the cases of sepsis followed operative delivery.

From the relation of the incidence of puerperal and respiratory infections Williams concludes that the safest time for women to bear children is in the period from midsummer to the beginning of winter.

A. F. LAKE, M.D.

Kefauver, F. S., and Hardie, A. T.: The Relationship Between Exogenous Throat Streptococci and Puerperal Infections. *Am. J. Obst. & Gynec.*, 1933, 227, 213.

The authors report two small epidemics of puerperal infection on maternity services. In both, a strain of hemolytic streptococci similar to that recovered from the cases of puerperal sepsis was found to be carried by a nurse. In one, the morbidity was 90 per cent and the mortality 30 per cent.

A set of rules for the conduct of attendants on the maternity service is given, and the importance of wearing masks is emphasized.

Nasopharyngeal carriers of hemolytic streptococci and possibly other organisms are a most dangerous source of frequently fatal sepsis in obstetrical cases from the moment labor begins (and possibly before) to the end of the puerperium.

Silent carriers are potentially as dangerous as persons acutely sick with fever. The former are less likely to cough and sneeze, but as a rule give a history of a recent acute exacerbation.

The infection is transmitted most frequently by contamination of the perineum by coughing, sneezing, or talking to the patient during preparation of the perineum or by the hands of the carrier. For the present, other less direct methods must be assumed and guarded against.

Since pupil nurses are untrained and unaccustomed to conscientious disinfection of the hands, it

is a wise precaution to make cultures in the case of each one at the time of her entrance to the maternity hospital and to delay her entrance until her throat is negative for hemolytic streptococci. Ward attendants, especially those serving food, should also be examined.

A single case of puerperal sepsis in an institution calls for an immediate rigid investigation and drastic measures to limit the spread of the infection.

EDWARD L. CORNELL, M.D.

Swenson, J. J., and Barry, L. W.: Streptococcal Puerperal Sepsis: Report of an Epidemic. *J. Am. M. Ass.* 1933, C, 19.

Of forty-six women delivered at the Acker Hospital, St. Paul, during a period of nine days, puerperal sepsis developed in six (13 per cent) and three of the latter died. The first two women who became infected had been delivered with forceps, but the four others had had spontaneous deliveries. All of the infected women had a normal temperature at the time of their admission to the hospital. Shortly after the development of infection in the last case cultures were taken of the throats of the staff house physicians and nurses. One physician and one nurse were found to harbor streptococci in their throats, but neither of them had attended the deliveries of the infected women. One interne delivered or assisted at the delivery of all of the infected women but his throat was negative and he gave no history of sore throat or infection of the upper respiratory tract.

The time of onset of the symptoms in relation to the time of delivery varied from eight hours to four days. Autopsy was performed in all of the fatal cases and in every instance revealed a purulent peritonitis. In every case the uterus was fairly well involuted. In two cases the endometrium was covered by inflammatory exudate, and in one case it was hemorrhagic.

The chief therapeutic measure used was blood transfusion. The source of the infection was never explained satisfactorily.

J. THOMAS WILKINS, M.D.

Thomas, M.: The Epidemiology Bacteriology and Treatment of Puerperal Sepsis. *J. Obst. & Gynec. Brit Emp.* 1933, XXXII, 877.

Thomas analyzes 800 cases of puerperal fever from the standpoint of epidemiology, bacteriology and treatment. The cases are divided into a group: (1) those in which the condition developed after full term, and (2) those in which it followed abortion.

The liability to infection appeared to be almost equal at all ages, but in the cases of full-term and premature births the liability to fatal infection steadily increased after the age of thirty. The danger of the development of sepsis is greatest after the first pregnancy, but the mortality of the condition is no greater in primiparae than in multiparae. After the sixth pregnancy it shows a definite in-

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Beacham, H. T. The Specificity of Pathogenic Infections of the Kidney. *J. Urol.*, 1933, **xxix**, 197

After studying the records of 100 cases of nephritis and perinephritic abscesses and the findings of 500 cystoscopic examinations the author concluded that staphylococcus aureus and the colon bacillus are the organisms most commonly discovered in the urinary tract. When suspensions of the organisms were injected into the renal veins of twenty-one dogs, the organisms were demonstrated in the glomerular capillaries, Bowman's capsule, and the tubules within the first thirty-six hours. Regions of complete necrosis of the tubules with normal glomeruli and interstitial tissue were found. Within a period of three weeks chronic interstitial nephritis was produced by the colon bacillus and acute glomerulonephritis by the staphylococcus aureus.

DONALD K. HIBBS, M.D.

Söderlund, G., and Wahlgren, F. Benign Renal Tumors (Beitrag zur Kasuistik der benignen Nierentumoren). *Acta chirurg. Scand.*, 1932, **lxxii**, 455

The authors report two cases of benign renal tumor. In the first one the tumor probably had its origin in the mesonephros. In the second it arose from a fully formed kidney, but probably also in this case on the basis of a malformation.

The first case was that of a boy about eighteen months old. Examination revealed a solid growth, about the size of a child's head, in the region of the left kidney. The general condition was poor, the child being thin and pale. As the neoplasm had developed rapidly during the previous three months, a diagnosis of malignant mixed tumor was made. Operation was refused. Six months later, at which time the patient's general condition was about the same although the tumor had increased in size, an excision was made for biopsy. The neoplasm was found to be situated behind the peritoneum. In its capsule there were distended veins. It bled easily. A pathologico-anatomical diagnosis of adenomyosarcoma was made. However, six months later the general condition was improved. Another operation was therefore performed and the tumor removed. It weighed 4.5 kgm. It was a polycystic tumor which histological examination showed to be benign.

The second case was that of a man forty-five years of age who, for about a year and a half, had noted an increase in the size of his abdomen and from time to time had pain in his back. Examination revealed the presence of a tumor larger than a man's head, which occupied the entire left side of the

abdomen and extended toward the lumbar region. Roentgen examination showed it to be closely related to the kidney. The appearance of the renal pelvis in a pyelogram did not indicate a malignant renal tumor. The growth was extirpated. It was found to weigh 5.5 kgm and to have arisen in the left kidney. Histologically it was benign and resembled most closely a lipofibroma.

Pemberton, J. DeJ., and McCaughan, J. M. Intrarenal and Perirenal Lipomata. *Surg., Gynec. & Obst.*, 1933, **lvi**, 110

From a review of the literature on intrarenal and perirenal lipomata the authors conclude that the cause of the tumors is unknown, the neoplasms are more common in women than in men, the diagnosis is difficult and, before operation, almost impossible, the treatment is surgical, the operative mortality is fairly high, and malignant change and recurrence are fairly common.

At the Mayo Clinic, Masson and Horgan reported 12 cases of retroperitoneal lipoma, C. H. Mayo and Dixon, 3, and Hunt and Simon, 2.

In a review of the records of 314 cases of retroperitoneal tumors observed at the Mayo Clinic in the period from 1910 to 1930, the authors found those of 42 cases of retroperitoneal lipoma. Forty of the lipomata were extrarenal and 2 were intrarenal. Nineteen of the patients with a lipoma were men and 23 were women. The youngest patient was twenty-eight years and the oldest sixty-eight years of age. The average age was forty-nine and three-tenths years. The average duration of symptoms was five and eight-tenths years, the shortest three weeks, and the longest twenty years. A retroperitoneal tumor was suspected in only 5 cases.

In 28 of the 42 cases the patient complained of enlargement of the abdomen or the presence of a mass. Abdominal pain or discomfort was present in 20 cases, dyspepsia in 11, loss of weight, strength, and appetite in 11, constipation or diarrhea in 8, nausea with vomiting in 4, and testicular swelling in 1. Examination disclosed a palpable mass in all but 1 case. In 7 cases the mass was on the right side, and in 14 on the left. In 5 cases the entire abdomen seemed filled with the tumor, and in 2 the mass was in the umbilical region. The upper part of the abdomen was involved by a mass in 1 case, and the lower part in 2 cases.

At operation, a transperitoneal approach was employed in all but 4 cases. Nephrectomy was performed in 6. In 21 cases the tumor was thought to have been removed completely, but in 13 only a portion of it could be removed.

The largest specimen removed was a fibromyxolipoma weighing 47 lb. The total number of tumors

tions, this is at present impossible. The social service bureau for pregnant women is indispensable as many causes of premature birth escape the district physician with the limited facilities at his disposal. In conclusion the author calls attention to the necessity for the cooperation of the National Health Bureau, especially with regard to the problems of unified statistics on premature births, stillbirths, and early infant mortality
Kinsler (G)

MISCELLANEOUS

Adams G., and De Maria G.: The Presence of Agglutinins in the Colostrum (Sulla presenza delle agglutinine nel colostro) *Riv. Ital. F. Ginec.* 932, IV 405.

The authors studies of the colostrum of thirty-five women with regard to agglutination of typhoid, Paratyphoid A and Paratyphoid B bacilli gave the following results

Bacilli	Positive	Negative
Typhoid	3	32
Paratyphoid A		24
Paratyphoid B	2	27

From these results and a knowledge of the time of the previous infection the authors conclude that antibodies and antitoxins appear in the colostrum in highest concentration in the first few days and then gradually diminish. They are absent in the mother about eight years after the primary infection.

A. LOREN ROSE, M D

DeLee, J. B., and Siedentopf H.: The Maternity Ward of the General Hospital. *J. Am. M. Ass.* 1933 9, 6.

This article is a discussion of the incidence and causes of puerperal mortality today. Quoting numerous reports, the authors call attention to the high mortality in institutions as compared with the mortality of deliveries in the home. They state that hospitalization of maternity cases is increasing everywhere, but puerperal mortality is not decreasing anywhere. Mediocre midwifery and puerperal infection either alone or combined, seem to be responsible for most of the mortality. De Lee says that the maternity ward in the general hospital of today is a dangerous place for a woman to have a baby. The danger is due to the infective influences emanating from the wards devoted to medicine, surgery gynecology and pediatrics, the laboratories, and the autopsy room. In a review of the reports of thirty-eight epidemics of puerperal infection which they collected, the authors found that thirty-five of the epidemics occurred in the maternity wards of general hospitals.

In conclusion the authors demand equality of the maternity ward with the surgical ward. They state that mediocre midwifery is the fault of the physician and should be checked by better obstetrical training. For elimination of the present dangers in the general hospital, they recommend architectural and administrative isolation of the maternity ward
ROWLAND M. EMMERTON, M D

The septum was resected. When the patient was re-examined a year and four months later he was able to empty the bladder completely.

GENITAL ORGANS

Krogius, A. Studies of the Nature of Prostatic Hypertrophy (Studien ueber die Natur der Prostatahypertrophie) *Acta chirurg Scand*, 1932, lxxii, 47

On the basis of histological studies of normal and hypertrophied prostate glands the author arrives at the following conclusions as to the nature and development of hypertrophy of the prostate.

Hypertrophy of the prostate is not a tumor formation. It is to be regarded as a hyperplastic regenerative process for the formation of new gland parenchyma to replace that used up in old age and is analogous to the regenerative phenomena occurring in the prostate under normal conditions.

Like normal regenerative phenomena, the exuberant processes leading to hypertrophy of the prostate also take their origin in the glandular ducts, the epithelium of which retains its ability to form new gland parenchyma until advanced age.

Hypertrophy of the prostate derives its particular character from the circumstance that the hyperplastic process takes place mainly in the central part of the prostate. In fact, in the dense fibromuscular stroma of this region there follows, with the glandular budding, a steady proliferation of the peritubular connective tissue to a far greater extent than in the peripheral parts of the prostate as a loose stroma must be prepared for the young glandular buds. In this way there arise small "adenofibromata" which subsequently expand with displacement of the surrounding stroma and thereby give rise to the localized nodular formations so characteristic of prostatic hypertrophy. The so-called "glandless nodules" also take origin from the peritubular stratum of connective tissue.

The epithelial covering of the newly formed glandular sacs soon develops into a mature, secreting epithelium of the apocrine type which delivers an apparently normal prostatic secretion. However, with the growth of the nodules there is a compression of the efferent ducts so that in a more advanced stage of the disease the excretory function of the prostate scarcely derives any further benefit from the secretion of the nodules. At the same time well-marked retrogressive changes occur in the gland with dilatation and cyst formation.

In its histological structure and entire mode of development hypertrophy of the prostate gland shows a marked similarity to mastopathia cystica.

Riches, E. W., and Muir, E. G. The Relationship of the Structure of the Enlarged Prostate to the End-Results of Prostatectomy *Brit J Surg*, 1933, xx, 366

In an attempt to determine the relationship between the type of prostate, the symptoms produced,

and the ultimate prognosis after prostatectomy, the authors studied the prostate and the history in 114 cases in which prostatectomy was performed. They suggest the following histological classification of benign prostatic conditions: (1) glandular enlargement, (2) intermediate form with glandular involvement and some fibrosis in the glandular tissue, (3) fibrous prostate, and (4) calculous prostatitis.

They conclude that complications are fewest, the mortality is lowest, and the end-results are most satisfactory in cases of the glandular type, and the mortality is highest in those of the calculous type.

THEODORE P. GRAUER, M.D.

Smith, G. G. The Treatment of Cancer of the Prostate *New England J Med*, 1933, ccviii, 57

The author discusses the various therapeutic measures employed in cancer of the prostate and their applicability and effectiveness in different stages of the disease.

He advised the use of deep X-ray therapy for the relief of pain from metastases, and irradiation by high-voltage X-rays or small doses of radium to retard the development of the primary growth. He believes that from 5 to 10 per cent of prostatic cancers are radiosensitive.

He is convinced that in early cases of prostatic cancer total prostatectomy should be done. When the diagnosis is uncertain, the prostate should be exposed perineally and a piece removed for diagnosis.

For cases too advanced for such procedure he advises relief of the obstruction by an intraurethral operation. When this is impossible, he recommends partial perineal prostatectomy or permanent suprapubic cystostomy.

GILBERT J. THOMAS, M.D.

Hinman, F. Tumors of the Testis, Five-Year Cures Following Radical Operation *Surg, Gynec & Obst*, 1933, lvi, 450

The author discusses the clinical and pathological characteristics and the treatment of tumors of the testis and tabulates the end-results of the various methods of treatment as determined by himself and others. He draws the following conclusions:

1. The radical operation for tumor of the testis is indicated in cases without clinical evidence of metastasis in which, after orchidectomy, the pathologist reports the tumor to be of a mixed type.

2. The mortality of the operation as performed by American surgeons is about 1 per cent. In view of the high morbidity following simple castration and X-ray irradiation, the risk of the radical operation is entirely justifiable.

3. The possibilities of the operation are proved by the fact that a cure was obtained in at least three of twenty-four cases of teratoma in which lymph metastases were removed.

4. The fact that eighteen of thirty-six patients in whose cases the pathologist could find no evidence of metastasis in the removed gland tissue are still living four years or more since the operation indicates that radical surgery is preferable to simple

reported on was 61. Forty four were apparently benign and 17 were definitely malignant.

Of the 42 patients, 8 are living and well. Two others are living, but developed a recurrence of symptoms two and four years after the operation. Eight patients died in the hospital. Seventeen have died since the operation. Seven cannot be traced.

A comparison of the data in these cases with the data reported in the literature showed in general a fairly close agreement.

In the interest of accurate pathological classification the authors urge that tumors of this type be subjected to careful histological study. They believe it possible that some of the tumors reported in the literature as perirenal lipomata were intrarenal, at least in origin. In this connection the observation of increased vascularity of the renal pedicle made at the time of operation is of particular interest.

Ravich, A.: A Critical Study of Ureteral Calculi. *J. Urol.*, 1932, xxix, 171.

After discussing the various theories regarding the causation of ureteral calculi the author calls attention to the fact that the only constant factor is urinary stasis. The stagnation causes changes in the tubular epithelium which result in gel formation and the accumulation of precipitated crystalloids. The chemical nature of stones depends upon the hydrogen-ion concentration of the urine, which changes from time to time. Other causative factors in stone formation are trauma, infection, faulty diet, and foreign bodies.

The author has found ureteral calculi twice as often in males as in females. Eighty per cent of his patients were adults. In 90 per cent of the cases x-ray examination was positive. In the treatment the most successful results were obtained by manipulation. Only 6.3 per cent of the patients passed the stone spontaneously and only 11.6 per cent were operated upon.

DONALD K. HINES, M.D.

BLADDER, URETHRA, AND PENIS

Lindström, E.: Two Cases of Ectrophy of the Bladder (*Zwei Fälle von Ectopia vesicae*). *Acta chirurg. Scand.* 93, lxxix, 34.

The author reports three cases of ectrophy of the bladder.

Case 1 was that of a boy five years of age who was operated upon by the Maydl-Berghand-Borelius method. The patient lived for sixteen and a half years after the operation and died of acute pneumonia. Once or twice he had mild attacks of pyelitis. Continence was complete. He was able to work until one week before his death.

Case 2 was that of a boy one year and seven months of age who was operated upon for a right sided incarcerated hernia and gangrenous appendicitis. Besides the ectrophy of the bladder he then had complete anal incontinence. When he was five and a half years old he returned for operation for the ectrophy. His general condition was poor

and he was thin and pale. As it was impossible to obtain any diversion to the intestine on account of the anal incontinence Segond's operation was performed. With the use of a receptacle for the urine during the day and a catheter dressing at night, he keeps dry. During the last twelve years he has developed quite well. The capacity of the bladder is about 120 cubic centimeters.

Case 3 was that of a woman thirty-six years of age who was hit at close range by a bullet which smashed the symphysis and injured the anterior wall of the bladder, the urethra, and the skin. During the cleansing of the wound and while the necrotic parts were cast off, the bladder became prolapsed through the large defect. An autoplasmic operation was done, the defect being closed with a flap of skin treated on the inside by the Thiersch method. During the first year gravel was passed, and three years later cystostomy was necessary on account of a stone in the bladder and another in the scar. After this operation, the patient was fairly capable of working with a receptacle fitted, until eighteen years later when she began to have fever and a decline in health due to pyonephrosis on the right side. This was treated by incision and evacuation. Three years later she had a recurrence of the pyonephrosis and died.

The author states that Segond's operation is the least taxing procedure in the cases of greatly debilitated patients and of value as an emergency operation when it is impossible as in his second case, to implant the ureter into the intestine and Alakka's operation cannot be considered because of absence of the appendix.

Ljunggren, L.: The Clinical Picture and the Treatment of Bipartite Bladder (*Beitrag zur Klinik und Therapie der Vesica bipartita*). *Acta chirurg. Scand.* 93, lxxix, 248.

The author reports a case of bipartite bladder in a man thirty-one years of age. Except for a brief attack of cystitis at the age of nineteen years and a very weak urinary stream for several years, the patient had no urinary symptoms until his twenty-eighth year. He then developed symptoms of chronic retention of urine. Examination revealed chronic retention of urine in a dilated, trabecular bladder with numerous diverticula. A cystogram disclosed a large defect with an arc-shaped outline in the right lower part of the bladder. Intravenous pyelography showed dilatation of the renal pelvis and ureter on the left side. On the right side no sign of excreted opaque medium could be seen.

At operation, the bladder was found to be divided into two compartments by a complete and upper folded septum which extended anteroposteriorly and was composed of muscular tissue covered by mucous membrane on both sides. The urethra originated in the left compartment. The right compartment had no outlet. The left ureter ended in the left compartment and from all appearances, the right ureter opened into the right compartment.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Compere, E. L. The Role of the Parathyroid Glands in Diseases Associated With Demineralization of the Human Skeleton *J Bone & Joint Surg*, 1933, **xv**, 142

Hyperparathyroidism, usually associated with an adenomatous tumor of one or more of the parathyroid glands, has been established as the etiological factor in the production of generalized osteitis fibrosa, a very chronic and sometimes fatal disease characterized by pain, fractures, and disabling deformities. The changes occurring in hyperparathyroidism are a generalized demineralization of the skeleton, the formation of multiple foci of osteitis fibrosa with or without benign giant-celled tumors, and the formation of cysts. Generalized osteitis fibrosa is a disease entity differing from localized osteitis fibrosa, osteitis deformans, osteogenesis imperfecta, osteomalacia, rickets, and ankylosing polyarthritis. The demonstration of osteoporosis of the skeleton associated with hypotonia and decreased irritability of the muscles to electrical stimuli, with or without an elevation of the serum calcium, is too little evidence on which to base a diagnosis of overfunction of the parathyroid glands, and enlargement of the parathyroid glands in the absence of a negative calcium balance or at least a reduction of the calcium balance is not sufficient evidence to justify removal of the glands. It has been demonstrated clinically in deficiency disease that hyperplasia of the parathyroid glands may be a purely compensatory enlargement in response to a demand of the organism.

By photomicrographs and a table the author shows the differences in the pathological changes in hyperplasia and adenoma of the parathyroids. He takes issue with those who have advocated parathyroidectomy for ankylosing polyarthritis. He says, "The fact that ankylosing polyarthritis was not noted in any of the more than fifty cases of generalized osteitis fibrosa which have been reported, in which a very high serum calcium and low serum phosphorus were found and a parathyroid adenoma was removed at operation or postmortem examination, is certainly significant." In the author's cases of Paget's disease there was a marked positive calcium balance with a greatly diminished excretion of calcium by the kidneys. Also by means of a table Compere compares several clinical syndromes associated with local or general demineralization of the skeleton. From his studies he draws the following conclusions:

1 Generalized osteitis fibrosa is differentiated from other skeletal dystrophies by a high serum cal-

cium, a low serum phosphorus, increased excretion of calcium in the urine, and an adenomatous tumor of the parathyroid glands.

2 There is no good evidence that Paget's disease and ankylosing polyarthritis are caused by hyperparathyroidism. Therefore parathyroidectomy is not a justifiable procedure in these conditions.

ROBERT C. LONERGAN, M.D.

Van Alstyne, G. S., and Gowen, G. H. Osteitis Tuberculosis Multiplex Cystica (Juengling) Report of a Case Involving the Larger Long Bones, with Complete Proof of Its Tuberculous Etiology. A Review of the Literature *J Bone & Joint Surg*, 1933, **xv**, 193.

In 1920 Juengling reported his observations, begun in 1911, on a cystic condition of bone which he claimed was due to tuberculosis and called "osteitis tuberculosa multiplex cystica." In 1911 he first observed the condition in the phalanges of the hands and feet, the metacarpals, and the metatarsals. In the period from 1911 to 1919 he saw four cases.

The onset of the condition is gradual. Pain may be present early, but is not severe. There is marked cystic degeneration of the bone which is readily demonstrable by roentgenographic examination. The small cysts tend to fuse and form larger cysts. The periosteum and joints are not affected but there may be a lupoid involvement of the skin in the diseased area. Histological examination shows epithelioid and lymphocytic cells, rarely giant cells, no caseation, and no tubercle bacilli. The results of guinea-pig inoculation are frequently negative for tuberculosis and when positive are slow in appearing, requiring several months. The von Pirquet test is usually negative. The course of the disease is slow and shows a definite tendency toward spontaneous improvement and even recovery.

In the case reported by the author roentgen-ray examination disclosed cysts of the elbow and humerus. Biopsy revealed tubercles in the wall of a cyst in the elbow and in a regional lymph gland. The pathological changes are shown by photomicrographs. The guinea-pig and von Pirquet tests were positive evidence which the author presents to support the theory that the condition is tuberculous.

ROBERT C. LONERGAN, M.D.

Chievitz, O., and Olsen, H. C. A Case of Generalized Osteitis Fibrosa Improved After Removal of a Parathyroid Tumor. *Acta chirurg Scand*, 1932, **lxvi**, 172.

Following a review of the history of generalized osteitis fibrosa and hyperparathyroidism, the authors report a case in which the condition occurred in a woman twenty-five years old. Roentgen-ray exam-

castration in such cases also and that the surgeon should not consider it unnecessary even when the pathologist reports that he has removed no metastatic cancer.

THEODORE P. GRAVER, M.D.

MISCELLANEOUS

Moore, H.: Some Problems in the Diagnosis and Treatment of Genito-Urinary Tuberculosis. *Med. J. Australia*, 933, 4, 237

Moore emphasizes that genito-urinary tuberculosis is always part of a general infection, varies in its manifestations according to local and general resistance and is a relatively common condition.

Of the thirty patients whose cases he reviews, 50 per cent were between twenty and forty years and 30 per cent were between twenty and thirty years of age. The time of onset is usually the early part of the third decade of life. Frequency of micturition was present in all of the cases. Pyuria was a constant feature. In many cases examination of the first catheter specimen revealed pus without any organisms, but tubercle bacilli were found in a twenty-four hour specimen or by guinea-pig injection. Hematuria was present in some stage in 40 per cent of the cases. The patients complained of pain in the loin, the bladder or the urethra.

One of the most important findings of cystoscopic examination is smallness of the bladder. The bladder

bleeds easily from over-distention, the blood appearing to come from fine splits in the mucous membrane. The finding of typical tubercles or ulcerations is rare. Any retraction or scarring of the ureteral orifices should always suggest the possibility of tuberculosis. Moore avoids pyelography unless the site of the lesion cannot be determined without it.

F. M. COOMES, M.D.

Higgins, C. C.: The Experimental Production of Urinary Calculi. *J. Urol.* 911, xxix, 57

The author reports the results of feeding 200 albino rats a diet deficient in Vitamin A. Of the 25 control rats, sand was demonstrated in the bladder in 1. The animals were killed after from thirty to two hundred and fifty days. The incidence of calculi formation was 5 per cent in the first thirty days and 88 per cent in the last seventy days of the experiment.

Higgins concludes that albino rats maintained on a diet deficient in Vitamin A develop renal and bladder calculi associated with alkalinity of the urine, and that after ten weeks, keratinization of the epithelium of the genito-urinary tract develops. In the experiments reported the bladder calculi disappeared when cod liver oil was added to the diet. The incidence of urinary infection was practically equal to that of calculus formation.

DOUGLAS K. HENY, M.D.

Although trauma may be an etiological factor, its part in the development of the condition may be difficult to prove. However, the history and clinical data, when substantiated by evidence of fracture in the roentgenogram, are conclusive. Roentgenograms taken previous to injury are seldom available. In 9 per cent of the cases reviewed the spondylolisthesis was symptomless.

In some cases a hard, bony mass is palpable low in the abdomen. On rectal, proctoscopic, or manual examination, narrowing of the anteroposterior diameter of the pelvis may be noted. In about 2 per cent of the cases reviewed the spondylolisthesis was of the reverse type.

Congenital anomalies were present in a high percentage of the cases. Spondylolisthesis is seldom recognized in general practice. It is associated with chronic backache. When the clinical data are negative, its presence may be disclosed by roentgenological examination. The author believes that as a result of more common lateral roentgenographic examination of the lumbosacral area, the occurrence of this deformity in cases of chronic backache and injury to the spinal column will be found more frequently.

Klein, H. M. Acute Osteomyelitis of the Vertebrae. *Arch Surg*, 1935, **xxvi**, 169.

Klein made a clinical study of sixteen cases of acute osteomyelitis of the vertebrae. The presence of this rather rare condition in these cases was proved by operative or autopsy findings. The presumable portals of entry of the infection were established in fifteen of the cases. Direct trauma played no appreciable rôle in the pathogenesis of the condition, but most of the patients were suffering from some infection such as carbuncle, pneumonia, or phlebitis. In none was the condition of sudden onset with severe local symptoms and signs.

The clinical diagnosis was based chiefly on pain on movement of the spine and a grating sensation noted on palpation. Volkman ascribed the latter to sequestration of the spinous process. In many of the cases there was evidence of local inflammation, but gibbus was rare. Abscess is a frequent complication and may point in a number of situations—along the vertebral border, on the buttock, in the mediastinum, or along the psoas muscle.

Anatomically, all cases may be divided into two groups depending upon whether the inflammation occurs in the bodies or the processes of the vertebrae. It is striking that in none of the cases reviewed was there any roentgenological evidence of acute osteomyelitis.

The prognosis is dependent largely upon the presence and nature of existing complications. It is poorest in cases of epidural abscess.

The treatment is always surgical. The focus in the bone itself must be drained as soon as the patient's condition will permit. The mortality in the cases reviewed was over 50 per cent. The author reports each case in detail.

PAUL C. COLONNA, M.D.

Seddon, H. J. Calcaneoscapoid Coalition. *Proc Roy Soc Med*, Lond, 1935, **xxvi**, 419.

Calcaneoscapoid coalition is a congenital skeletal abnormality of the calcaneoscapoid gap which is often associated with spasmodic flat-foot. The diagnosis is made by roentgen-ray examination with an oblique lateral view of the foot.

The condition appears to have some relationship to peroneal spasm as the usual forms of treatment for spasmodic flat-foot are unsuccessful when calcaneoscapoid coalition is present.

Resection of the offending bar may be beneficial. If the symptoms persist after this operation, subastragloid arthrodesis will be necessary.

ELVEN J. BERKHEISER, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Phemister D. B. Operative Arrestment of Longitudinal Growth of Bones in the Treatment of Deformities. *J Bone & Joint Surg*, 1933, **xv**, 1.

Among the causes of increased or decreased longitudinal growth of bones during the growing period are fractures with overriding of the fragments or occurring through epiphyseal lines, infections of joints with epiphyseal destruction, such as tuberculosis of the hip and osteomyelitis, and enchondromata or exostoses at the ends of long bones. Infantile paralysis may retard growth in one extremity, and there are several types of congenital disturbances which may produce inequality in the length of the limbs. The nature of the causative agent and the duration of its activity determine the prognosis. Since longitudinal growth takes place in long bones through the cartilaginous epiphyseal lines, a compensatory overgrowth may occur in cases of fracture of the shaft of the femur with overriding of the fragments when these lines are uninjured.

Injuries or disease of bones in children may affect growth so as to produce deformities or a limp by the time adult life is reached. In some cases these sequelae may be prevented if, at the proper time, surgical fusion of the epiphysis and shaft is performed on the longer bone to check longitudinal growth. It may be indicated also on one side of the epiphysis in the forearm or leg to correct curvature or angular deformities when one of the two bones of the part is short. Great care is necessary in the choice of the time for the operation and of the epiphyses to be fused as the exact amount of bone growth which can be expected from each epiphysis is still unknown.

In the technique described a portion of cortical bone crossing the epiphyseal line, including a segment of metaphysis and a shorter piece of epiphysis, is excised, the sides of the adjacent cartilaginous disk are removed, and the bone transplant is inserted with its ends reversed.

Such an epiphyseodiaphyseal fusion operation has been done on thirty-four patients with inequality of the limbs due to various causes. Four cases in

lation in this case showed a pronounced osteoporosis with cysts in many of the bones. Exploratory excision from one of the cysts revealed a picture resembling that of giant-cell sarcoma. The serum calcium rose to 17.6 mgm. and the serum phosphorus fell to 1.6 mgm. per 100 c.c.m. Functional calcium tests showed a decrease in the absorption and an increase in the excretion of calcium.

At operation, a typical parathyroid adenoma measuring 35 by 30 by 5 mm. was removed. There were no operative complications. After the operation all of the pathological changes except the largest cysts disappeared. Eighteen months after the operation the largest cysts still persisted although the smaller cysts were filled in.

Troell, A.: A Case of Ewing's Sarcoma and a Few Remarks on the Treatment of Bone Sarcomata in General (Ein Fall von Ewing'sarkom nebst einigen Worten ueber die Behandlung von Knochen-sarkomen im allgemeinen) *Acta chirurg. Scand.* 1932 132, 501.

The author reports a case of Ewing's sarcoma of the first metatarsal bone which was treated by resection of the tarsus and metatarsus followed by roentgen irradiation. No recurrence has developed in the eighteen months that have elapsed since the operation. Three other cases of Ewing's sarcoma reported by Troell previously are reviewed briefly.

The surgical treatment of bone sarcoma is discussed on the basis of previously published cases in which a follow-up examination has been made. Particularly considered are biopsy and the choice between resection and amputation (disarticulation) as a standard method. Troell believes that biopsy is rarely necessary but cannot be dispensed with entirely. When it is performed with a correct technique it is usually reliable and apparently does not increase the risk of further spread or stimulation of the sarcoma. In the cases reviewed, resection yielded late results that were as good as those of amputating operations. Therefore in suitable cases it is to be preferred to the latter as it gives better functional and cosmetic results.

Nachlas, I. W.: Considerations on the Use of Parathyroidectomy for Arthritis. *J Bone & Joint Surg.* 1932, 27, 5.

Nachlas says that the term arthritis is applied to a heterogeneous group of clinical syndromes which probably include a variety of diseases differing in their etiology and pathology and resembling each other only in their visible point of attack, namely the joint surfaces.

The use of parathyroidectomy in arthritis is based on the assumption of a disturbance of the metabolism of calcium salts and the fact that parathyroid secretion mobilizes these salts. Calcium determinations have been made in arthritis by many investigators, but the reports regarding them have varied. Nachlas believes that as our knowledge of the action of the parathyroid secretion is still incomplete

and as diet is closely linked with the entire problem, it is advisable at the present time to leave the proposed parathyroidectomy for arthritis to the investigators rather than to accept it as a proved cure for the condition.

ROBERT C. LORAN, M.D.

Gilcrest, E. L.: Ruptures and Tears of Muscles and Tendons of the Lower Extremity. *J Am. Med. Ass.* 1932, 6, 53.

In an article containing a number of case reports Gilcrest calls attention to the frequency of partial and complete rupture of the muscles and tendons of the leg, discusses the causes, mechanism, and most common sites of these injuries, and emphasizes the importance of a careful systematic examination. He believes that early treatment, whether it is conservative or surgical, saves the patient much time and assures a much better ultimate result than delayed treatment. The article has a number of illustrations.

PAUL C. COLONNA, M.D.

Toshall, A. F.: Progressive Pseudohypertrophic Muscular Dystrophy. *South M J.* 1932, 25, 1250.

The author describes the five types of progressive pseudohypertrophic muscular dystrophy and discusses the theories as to their causes, the influence of heredity in their development, their characteristic pathological and chemical changes, and their clinical features. Two new methods of treatment which have yielded results much better than those obtained in the past are the injection of adrenalin and pilocarpin daily and the administration of glycine.

ELMER J. BERENSON, M.D.

Meyerding, H. W.: The Diagnostic and Roentgenological Evidence in Spondylolisthesis. *Lohr-Orth.* 1932, 22, 68.

Sixty-four per cent of the patients with spondylolisthesis observed at the Mayo Clinic were hard-working people. Their average age was forty years. Seventy-one per cent were men. The principal complaint was backache of almost nine years' duration. Although in many of the cases the patient had consulted a physician and had been subjected to roentgenographic examination, a diagnosis had been given in fewer than 10 per cent.

The symptoms of spondylolisthesis are relieved by rest and aggravated by hard work, especially stooping and lifting. The patient may appear well and may be gaining weight. The anteroposterior roentgenogram may seem to be negative. When the subluxation is slight and discernible only in lateral roentgenograms, malingering may be suspected. The clinical signs vary with the degree of the deformity. In the typical case there is a depression or lordosis of the lumbar apophyseal processes with prominence of the fifth lumbar apophyseal process and the sacrum. This region is involved in 80 per cent of the cases. With increased subluxation the torso is shortened and the pelvis broadened. Motion of the spinal column is limited principally on forward bending.

intentionally in the epiphyseal cartilage in the operative treatment of fractures may expose the patient to future risk of growth disturbances. A review of the literature shows that numerous such investigations have been carried out on animals (Ollier, Bidder, Ghillini, Nové-Josserand, Cornil-Coudray, Riedinger-Nakahara, and others). In the majority of the experiments there ensued a marked inhibition of growth which resulted in permanent shortening. This was most pronounced when the epiphysis was damaged with the epiphyseal cartilage, bony union then generally occurring between the epiphysis and diaphysis.

The author re-examined seventeen children treated for fracture of the lower end of the humerus by an open operation in which the reduced fragments were fixed to the humerus with nails through the lower epiphyseal line. All but one of the children were under twelve years of age. The youngest was a year and ten months old. The examinations were made from two and a half to eleven years after the operation. Contrary to the findings of the studies on animals, no definite disturbance of growth was apparent. However, in three cases there was a premature synostosis of the epiphyseal line. The author summarizes the results as follows:

- 1 The investigation did not show that the driving of nails through the epiphyseal line for the purpose of fixation or any other damage to the epiphyseal cartilage brought about inhibition of growth manifested by general shortening of the humerus.

- 2 There was no demonstrable partial disturbance of growth in the form of deformity. In six cases there was a varus position which was probably due to incomplete reduction.

- 3 In three cases, roentgenological examination revealed a premature synostosis of the epiphyseal line. Therefore more numerous follow-up examinations will be necessary before it will be possible to

exclude the risk of disturbance of growth by the treatment described.

Snodgrass, L. E. - End-Results of Carpal Scaphoid Fractures. *Ann Surg*, 1933, xcvi, 209

Snodgrass reports the end-results in 107 cases of fracture of the carpal scaphoid. In 48 of the cases roentgenograms of the end-results were made. Fractures of the carpal scaphoid were found to be third in frequency among fractures of the bones of the hand and wrist. In none of the cases reviewed was there a bipartite scaphoid.

After the age of fifty years fracture of the carpal scaphoid is quite rare. It is most common during the second and third decades of life.

For cases seen early the author advises the use, for not less than five weeks and longer if necessary, of a straight volar splint extending from the base of the fingers to the elbow. In cases complicated by arthritis the position of choice is dorsiflexion.

In most of the cases reviewed the fracture was caused by a fall on the hand in which the weight was received on the muscular volar-superior surface of the hand or by back-firing in the cranking of an engine. The force transmitted from the distal row of carpal bones reaches the scaphoid through the os magnum, the unciform, the trapezium, and the trapezoid. The rather frequent dislocation of the semilunar bone in fractures of the carpal scaphoid is due to the fact that the semilunar bone is the key-stone of the carpal arch.

In some of the cases in which, following a fall on the hand, the roentgen and clinical findings are negative for fracture of the carpal scaphoid the patient complains of rather severe pain in the wrist. The author attributes this pain to injury of the tendon and sheath of the flexor carpi radialis as it passes over the tuberosity of the scaphoid.

PAUL C. COLONNA, M.D.

which the operation was performed several years ago are reported briefly with roentgenograms. In some, the attempt was made to arrest bone growth completely and in others to check or direct it for the correction of angulation deformities. In the majority of the cases the operation was performed too recently for a report of the results.

CHRYSTIE C. GUY, M.D.

FRACTURES AND DISLOCATIONS

Forster, G. V.: Compound Fractures of the Long Bones. A Review of 244 Cases Treated by Débridement, Carrel-Dakin Technique, Open Reduction, and Flaying When Indicated. *Surg. Gynec. & Obst.*, 1931, lvi, 370

In the cases reviewed skeletal traction was usually applied when plates were not used. Of those in which primary plating was done, chronic osteitis resulted in 15.5 per cent and non-union in 15 per cent, whereas of those in which immobilization was obtained by other means, chronic osteitis resulted in 15.7 per cent and non-union in 4 per cent. The author emphasizes that the incidence of osteitis and non-union is lower when immobilization is obtained by the use of Lane plates than by other methods provided a thorough débridement is performed immediately after the injury and Carrel-Dakin technique is carried out until the wound closes. The Dakin solution will not harm the fresh callus if it is not too caustic.

MARION L. DALL, M.D.

Hyblinetta, S.: Transplantation of a Bone Fragment to Prevent Recurrent Dislocation of the Shoulder: Findings and Results of the Operation. (De la transplantation d'un fragment osseux pour rendre une luxation récidivante de l'épaule; constatations et résultats opératoires). *Acta chirurg. Scand.*, 93, lxxi, 41

During the period from 1915 to 1930 the author operated on twenty-two cases of recurrent dislocation of the shoulder and in so doing opened the joint widely to determine its anatomical appearance. In all of the cases there was damage to the joint capsule as well as to the labrum glenoidale and the rim which readily explains the tendency toward recurrence.

The labrum was flattened out and torn into threads or entirely destroyed, and in ten cases the rim was damaged so that the head of the joint had lost its normal support. Corresponding to the changes in the labrum and the glenoid rim, the joint capsule was detached from the latter and, as seen from within the joint, the entrance to the false joint cavity was in the form of a pointed arch or a wide oval communication which in some cases suggested a direct continuation of the joint cavity in a direction for ward or forward and downward.

In twenty-one of the cases the operation consisted in placing a bone graft from the tibia or the iliac crest in a periosteal pocket close to the glenoid rim

where the rim had been damaged or the capsule was defective. The graft was fixed merely by tightening the capsule in the closure of the capsular rent, including the subscapularis tendon. In none of the cases was there any recurrence. All of the patients have a feeling of security in the joint and are fully capable of following their usual occupation, even those who had a mild infection which rendered the prognosis rather unfavorable. All but two have quite normal mobility. Two have a reduction of mobility but are well able to work. The author maintains that in most occupations working ability depends more on security than complete mobility of the joint.

Hyblinetta is of the opinion that the cause of recurrent dislocation of the shoulder joint is the damage sustained at the first dislocation, and that the method of repair he describes is the most correct and reliable method as it creates a support for the articulating head at the point where the injuries decreased the support.

Gejrot, W.: Intra Articular Fractures of the Capitulum and Trochlea of the Humerus, With Special Reference to the Treatment. *Acta chirurg. Scand.* 93, lxxi, 53

The author reports five cases of fracture of the capitulum and trochlea of the humerus. In one case the fracture was caused by an iron rod penetrating from outside the joint, and in the others by a fall on the arm. In two and probably three of the latter the impact was received on the dorsal side of the forearm and in one on the hand. In these four cases the fragment consisted of the anterior area of the capitulum with a portion of the trochlea.

In one case the treatment was conservative. The result was fairly good function of the arm with mobility through the arc of from 125 to 85 degrees. In two cases the fragments were removed with a very satisfactory result. A still better result was obtained in a case in which manipulative reduction was carried out and a case in which reduction was done by open operation.

In fractures of this type the chance of success from reduction by manipulation is very slight whereas reduction after arthrotomy offers no more difficulty. The difficulties are greatest in the fixation of the fragment. In the cases reported it was possible to keep the fragment in position only by fixing the rim in extreme flexion and separation. The author emphasizes the importance of exact apposition and fixation of the fragment. If this is impossible, a better result is obtained by entrapping the fragment.

Bergsjö, E.: Injuries of the Epiphyseal Line in the Operative Treatment of Fractures at the Lower End of the Humerus (Über Schädigungen der Epiphyseanlage bei operativer Behandlung von Frakturen am unteren Humerusende). *Acta chirurg. Scand.* 93, lxxi, 69.

The author reports an investigation carried out to determine whether the loosens sometimes produced

angustus obliterans sympathetic ganglionectomy has proved efficacious. The selection of the cases is based on the demonstration of excessive vasoconstriction in the affected extremity, correct diagnosis, and the age, occupation, and general condition of the patient.

Arteriosclerosis is a generalized process, but may be more intense in some vascular areas than in others. There is a distinct tendency toward thrombosis in the peripheral vessels. Arteriosclerosis with occlusion of the peripheral arteries occurs more frequently in males than in females. Minor cutaneous lesions should be prevented. Mild grades of radiant heat should be applied for short periods. Ethyl alcohol given by mouth in doses of 0.5 c.cm. per kilogram of body weight two or three times a day often controls pain. Bland antiseptic dressings of boric acid or thioresol or anesthetic ointments applied to the trophic lesions diminish infections and frequently give relief. High amputation may be necessary. Operation on the sympathetic nervous system is not effective in this condition.

Horton, B. T., and Brown, G. E. Thrombo-Angiitis Obliterans in Women. *Arch. Int. Med.*, 1932, 1, 884.

The most perfect example of the relation of disease to sex is hæmophilia. Of the diseases which attack structures common to both sexes, those which involve the vascular system, such as diseases of the coronary arteries and arteriosclerosis of the peripheral vessels, are probably more common in man. Raynaud's disease is an example of a disease which is much more frequent in women. According to statistics, it is 9 times more common in women than in men. This fact is of importance in the diagnosis of Thrombo-angitis obliterans, which is probably an inflammatory disease of the arteries and veins due to some infectious or toxic agent, occurs with a similar greater frequency in men. This difference in its sex incidence may be related to

1. Some focus of infection peculiar to the male. The authors suggest that the prostate gland or the seminal vesicles may constitute such a focus. Their studies have shown the presence of prostatitis of Grade 2 or more in about 60 per cent of cases of thrombo-angitis obliterans. However, no causal relationship could be proved between this condition and the thrombo-angitis obliterans.

2. Some endocrine basis peculiar to the male. This has not been proved.

3. The greater use of tobacco by the male. According to Silbert, Meyer, Weber, and Erb, the use of tobacco is the etiological basis of thrombo-angitis obliterans. On the other hand, in a study of 350 cases of thrombo-angitis obliterans in men, Barker found that 3 per cent of the patients had never used tobacco and 20 per cent had used it in only very small quantities. However, he called attention to the fact that the disease is apparently more serious when tobacco is used freely. Meleney and Miller, Jablons, Koyano, and others have reported cases of

the condition in men who were not smokers. If tobacco is an important factor, an increase in the incidence of the condition in women is to be expected.

4. The occurrence of the disease in women in a form so mild that it is overlooked because of the absence of gangrene and other serious sequelæ.

The authors believe that the last explanation is the most logical, and that if more women were examined routinely for pulsations in the peripheral arteries, absence of pulsations in one or more of the vessels without symptoms would be found in a certain small percentage.

Superficial phlebitis is not rare in women. This raises the question whether chronic relapsing superficial phlebitis which, when it occurs in men, is diagnosed as thrombo-angitis obliterans, can be so diagnosed when it occurs in women. In some cases of superficial phlebitis one or more arteries are closed. As yet, however, our knowledge has not progressed to a point at which the pathological changes in phlebitis can be accepted as pathognomonic of thrombo-angitis obliterans. The clinical course of the disease is probably of more diagnostic significance than the pathological picture.

The total number of cases of thrombo-angitis obliterans studied by the authors is slightly less than 700. Only 10 (1.2 per cent) of the patients were women. Buerger reported 2 cases of thrombo-angitis obliterans in women in which the condition was diagnosed clinically. Meleney reported the case of a Chinese woman with the typical pathological picture and clinical course of the disease. The condition seems to be more serious in Jews than in gentiles.

Further consideration of the disease with its greater incidence in males should be delayed until a larger number of women with complaints in the extremities have been examined. The authors are of the opinion that the condition has a higher incidence in women than is evident from their findings.

They report 10 cases of thrombo-angitis obliterans in women which were observed at the Mayo Clinic, the first series in women to be placed on record.

Bogoraz, N. Plastic Operations on the Blood Vessels (Zur Plastik der Blutgefäße). *Verh. chir. Arch.*, 1931, XXX, 470.

An adequate blood supply is the most important requirement of every organ in the human body, as without it the life of the organ cannot continue. For this reason plastic operations on the blood vessels are of great importance in reconstructive surgery. The technique of blood-vessel suture has been perfected, but some clinical problems remain unsolved. For instance, why does a vessel sutured *in situ* heal smoothly and strongly, while an extremity subjected to amputation becomes necrotic after suture of all the tissues including the blood vessels? Only very great narrowing of the vascular trunk (more than 60 to 75 per cent of the lumen) markedly disturbs the peripheral circulation, and compensation for marked disturbances of the circulation following

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Brown, G. E.: Diseases of the Peripheral Arteries; Classification, Diagnosis, and Treatment. *Postgraduate M J* 1933 xxvii, 305.

Arterial diseases can be divided into the functional and the organic types, and each of these subdivided into diseases of local distribution and diseases of general distribution. Functional disorders, whether of local or general distribution, may be of a vasoconstricting or a vasodilating type. Thus, Raynaud's disease is a functional, local vasoconstricting disorder erythromelalgia, a functional local vasodilating disorder; primary essential hypertension in its early stages, a functional, general vasoconstricting disorder and primary essential hypotension, a functional general vasodilating disorder.

Although, as has been said, organic types of arterial disease are subdivided into those of local and those of general distribution, the latter in turn cannot be subdivided sharply into disorders of a vasoconstricting and a vasodilating type. The organic local disorders are arteriosclerotic diseases such as acute gangrene and diabetic gangrene, thrombo-angitis obliterans, simple thromboses and embolism, congenital and acquired arteriovenous communications and aneurisms with or without thrombosis. Organic general disorders are primary arteriosclerosis and secondary arteriosclerosis due to such causes as hypertension and lead.

Brown reviewed 2158 cases observed at the Mayo Clinic. In approximately 75 per cent of these the condition was of an occlusive nature, most of them being cases of thrombo-angitis obliterans or arteriosclerosis with occlusion. About 20 per cent were cases of vasoconstrictor disturbance, most of which were cases of Raynaud's disease. Congenital disturbances constituted 6 per cent of the cases, and vasodilator disturbances about 3 per cent.

By far the most important procedure in diagnosis is clinical examination of patients suspected to have a disorder of the peripheral circulation. One of the most pathognomonic symptoms of occlusive disorders is claudication. It is essential to ascertain the presence or absence of pulsation of the usually palpable arteries of the hands and feet. Instrumental examinations are of secondary importance in the study of the patient. Of great importance is a study of the surface temperatures of the peripheral areas.

Two phenomena characteristic of vasomotor disturbances are intermittency at least in the early stages, and changes in the color and temperature of the affected part.

The minimal requisites for the diagnosis of Raynaud's disease are: (1) trophic changes or gangrene which, if present, are limited in large degree to the

skin, (2) symmetrical or bilateral involvement (3) absence of occlusive lesions of the peripheral arteries, and (4) intermittent attacks of changes in color which, as a rule, precede the trophic changes by months or years. Secondary criteria are the greater frequency of the condition in females than in males and the absence of pain. In the severe form, particularly when trophic lesions are present, there may be evidence of organic changes in the digital arteries (Lewis).

Secondary vasospastic disturbances are not important.

In primary vasodilating disturbances the important signs are intermittency of the phenomena and an increase in the surface temperature and redness in the affected part during the attack. The classical example of primary vasodilating disorder is erythromelalgia. This is an extremely rare disease. At the Mayo Clinic it is found in 1 of 40,000 patients. It is no more frequent in one sex than in the other. The criteria for diagnosis are: (1) a bilateral burning distress in the affected parts, (2) production and aggravation of the distress by heat and exercise, (3) relief from rest, the application of cold, and elevation, and (4) a sharp increase of local heat in the affected parts. Redness and flushing may vary in degree. The peripheral arteries are open, and the amplitude of pulsations may be greatly increased during the attacks. There is no known treatment.

Secondary vasodilating disturbances are often very distressing. The most important of these has been found in cases of polycythemia vera. There is no effective treatment.

Thrombo-angitis obliterans involves largely the arteries of large and medium size in the extremities, but the superficial veins are frequently involved by a similar process. There is active proliferation of the intima followed by the deposition of a soft red thrombus which is finally converted into dense white thrombus. Ninety-eight per cent of patients with this condition observed at the Mayo Clinic were males. The majority of patients are seen when they are in the fifth decade of life. Forty-five per cent of the patients seen at the Mayo Clinic were Jews. The cause of the disease is unknown.

If the diagnosis is made in the early stages, before trophic changes and ulceration have occurred, protective measures are paramount. Measures to increase the circulation are of value. Postural exercises are beneficial. The extremities may be warmed by mild grades of radiant heat. Contrast baths may be used. Various substances have been injected intravenously. One of the most effective measures causing vasodilatation is the induction of systemic fever. This should not be used in arteriosclerotic disease. In properly selected cases of thrombo-

angitis obliterans sympathetic ganglionectomy has proved efficacious. The selection of the cases is based on the demonstration of excessive vasoconstriction in the affected extremity, correct diagnosis, and the age, occupation, and general condition of the patient.

Arteriosclerosis is a generalized process, but may be more intense in some vascular areas than in others. There is a distinct tendency toward thrombosis in the peripheral vessels. Arteriosclerosis with occlusion of the peripheral arteries occurs more frequently in males than in females. Minor cutaneous lesions should be prevented. Mild grades of radiant heat should be applied for short periods. Ethyl alcohol given by mouth in doses of 0.5 c.cm. per kilogram of body weight two or three times a day often controls pain. Bland antiseptic dressings of boric acid or thiocresol or anæsthetic ointments applied to the trophic lesions diminish infections and frequently give relief. High amputation may be necessary. Operation on the sympathetic nervous system is not effective in this condition.

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Bogoraz, N. *Plastic Operations on the Blood Vessels* (*Zur Plastik der Blutgefäße*). *Nov. chir. Arch.*, 1931, xxiii, 470.

An adequate blood supply is the most important requirement of every organ in the human body, as without it the life of the organ cannot continue. For this reason plastic operations on the blood vessels are of great importance in reconstructive surgery. The technique of blood-vessel suture has been perfected, but some clinical problems remain unsolved. For instance, why does a vessel sutured *in situ* heal smoothly and strongly, while an extremity subjected to amputation becomes necrotic after suture of all the tissues including the blood vessels? Only very great narrowing of the vascular trunk (more than 60 to 75 per cent of the lumen) markedly disturbs the peripheral circulation, and compensation for marked disturbances of the circulation following

circular vessel suture is completed in from two to eight days after operation. The blood-vessel operations which are begun with opening of the lumen are (1) blood-vessel suture in lacerations and aneurisms, (2) the filling-in of defects in the vessel walls, (3) implantation of veins into arterial defects, (4) blood-vessel suture in organ transplantations, (5) suture of one vessel into another to change the direction of the blood flow and (6) removal of thrombi from blood vessels.

The suture of lateral blood-vessel injuries is a technically simple and satisfactory procedure which can be carried out easily on any vessel. The vessel usually remains quite patent, although its lumen is considerably narrowed. For instance the femoral artery may be reduced to the width of the radial. The author has sutured the common iliac, the common carotid the external iliac, and the subclavian arteries, the external iliac, subclavian, pulmonary and hepatic veins, and the inferior vena cava. A circular suture is technically more difficult, and in large injuries of vessels is hardly possible.

The filling-in of a defect in the wall of an artery with a piece of vein wall was carried out successfully in one case. The femoral artery was repaired with a patch from the femoral vein.

When the defect is too large that is, when a segment of an artery has been completely torn out, the artery must be repaired by a segment of vein transplanted by circular suture. The author reports four cases in which this was done successfully. In one of these a segment of vein 30 cm. long was implanted in a defect of the femoral artery. Almost the entire femoral artery was replaced by the saphenous vein.

In the transplantation of organs, suture of the vessels is quite difficult because of their small caliber. Therefore the smaller vessel is usually implanted end-to-side into the larger one.

The Wiering operation, suture of the central stump of the femoral artery into the femoral vein, is no longer performed. However suture of the superior mesenteric vein into the inferior vena cava in cirrhotics of the liver and ascites is an example of suture to change the direction of blood flow.

Among the group of operations for the removal of thrombi from arteries is the well-known Trendelenburg operation. The author has performed it successfully six times and has done other arteriotomies on the iliac and femoral arteries successfully three times. He calls attention to the difficulties in determining the indication for the Trendelenburg operation. Undoubtedly severe cases of embolism of the pulmonary artery terminate fatally more often than they reach the operating table. On the other hand, the milder cases become cured under conservative treatment without operation.

In conclusion, the author points out that arteries and veins provide valuable material for various operations. The use of both petioled and free transplants is very successful. The various procedures can be performed far more easily on large vessels than on small vessels.

G. ALLEN (2)

RETICULO-ENDOTHELIAL SYSTEM

Gittins, R., and Hawkey, J. C.: Reticulo-Endotheliomatosis, Ovarian Endothelioma, and Monocytic (Histiocytic) Leukemia. *J. Path. & Bacteriol.* 933, xxxvi, 115.

The authors report a case of bilateral ovarian endothelioma in an infant one year of age. A few weeks after surgical removal of the neoplasms the patient developed a general reticulo-endothelioma with the blood picture of histiocytic leukemia and a marked increase in lymphocytes of the normal type.

Endothelioma of the ovary is rare. Several varieties are recognized. The tumors in the authors' case resembled a reticulo-endotheliomatous process, a variety not hitherto recorded.

Histiocytic leukemia is also rare, there being but nineteen cases on record. The occurrence of focal neoplasia (ovarian endotheliomata) and general (histiocytic) leukemia in the same patient within a few weeks suggests that this type of leukemia is of a neoplastic character.

MANUEL E. LICHTENSTEIN, M.D.

LYMPH GLANDS AND LYMPHATIC VESSELS

Toddy, J. M. The Problems of Lymphoid Tissue. *Arch. M. S.* 938 B, 1052.

The term "lymphoid" is applied to a complex of tissues widely distributed throughout the body. Because of their wide distribution, it has been necessary to study these tissues chiefly by clinical and pathological investigations. Experimental methods such as extirpation and exposure to X-ray irradiation have been of little value.

Since lymphoid tissue is so often the site of secondary inflammation and malignant deposits, it has been assumed to have the function of a barrier preventing the spread of injurious substances. However, there are serious objections to this hypothesis. While it is true that lymph glands act as temporary barriers to the spread of disease, it is true also that lymphatic vessels facilitate the spread of disease. Thus, in the case of the axillary glands, for example, the gain from barrier action is more than offset by the easy dissemination made possible by the lymphatic vessels. The lymphoid tissue in the gastrointestinal tract is thought to be even more defensive, yet except in the terminal stages of illness, old persons, in whom the lymphoid masses (Peyer's patches) have usually disappeared, are much less liable to develop intestinal inflammation than young persons.

In the normal body the one function which can be definitely assigned to the lymphoid tissue is the formation of lymphocytes. This lymphocytopoietic function is well established. The author reports experiments carried out on anesthetized dogs in which lymph collected by a cannula inserted into the thoracic duct was measured and counts of the lymphocytes were made every hour. In any given

animal the lymph flow and lymphocyte count were quite constant. In the case of a dog weighing 10 kgm. about 25 c.cm. of lymph containing at least 10,000 lymphocytes per cubic millimeter were collected every hour. The daily output of lymphocytes numbered 6,600,000,000. The total number of lymphocytes circulating at any one time (calculated from the lymphocyte count per cubic millimeter of a known blood volume) averages about 2,000,000,000. These figures suggest that the lymphocytes of the blood are replaced 3 times daily. In older animals they are somewhat lower. As the number of lymphocytes in the blood remains constant in spite of the enormous numbers of lymphocytes which enter the blood daily, equally large numbers must leave the blood daily. Hence the number in the blood at any one time represents the balance between those entering and those leaving. Lymphocytosis may be a true lymphocytosis in which more lymphocytes are entering than are leaving the blood, or a false

or retention lymphocytosis in which there is some interference with the mechanism whereby lymphocytes leave the blood. Children present a true lymphocytosis which can be correlated with the active growth processes of childhood.

The fundamental problem of lymphoid tissue is the determination of the fate of the lymphocytes. Where do the enormous numbers of lymphocytes leave the body and for what purpose? It is believed that they are filtered off in the bone marrow and there develop into the various blood cells. This is difficult to prove, but it is certain that the lymphocytes are young and actively growing cells. Whatever part of the body they are intended for must be a region which is in need of a regular supply of young and active cells. In the studies on dogs reported by the author the lymph showed a fat content of only from 1 to 3 per cent and no fat could be demonstrated in the lymphocytes by histochemical methods.

CLARENCE C. REED, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE; POSTOPERATIVE TREATMENT

Hyman, H. T., and Hirschfeld, S.: The Therapeutics of the Intravenous Drip. *J Am. M. Ass.* 933, 6, 305.

When the intravenous drip is used the unpleasant and possibly fatal sequelae which sometimes follow the rapid intravenous introduction of fluids are avoided. The apparatus must be carefully cleaned, rinsed, and sterilized or reactions may ensue.

The intravenous drip method of administering fluids is indicated in cases of hemorrhage or dehydration. The fluid volume may be restored by the use of normal salt solution, dextrose solution, or citrated blood as indicated. The intravenous drip is of extreme value in shock. In infections it acts as a supportive measure and is ideal for the administration of specific therapeutic agents.

In surgical cases it prevents postoperative complications, such as nausea and edema, and a marked fall in the blood pressure under spinal anesthesia.

The internet finds it of extreme value in the treatment of diabetic coma, anemia, cholera, and the intestinal intoxications of childhood. It is thought to be of value also in the treatment of poliomyelitis and encephalitis.

OSWALD A. COLLIER, M.D.

German, W., Flinschwer, E. M., and Davis, J. B.: The Establishment of Circulation in Tubed Skin Flaps. An Experimental Study. *J. Clin. Surg.* 1933, 27, 27.

It is often impossible to shift a single-pedicle flap into its new bed immediately. The tubed flap is of advantage because it is flexible and circulation is assured by the delay in the transfer. The authors made an experimental study on dogs to determine when the circulation of such flaps is sufficient to allow division of the first pedicle. Flaps were made on the abdominal walls and at various intervals injections of toluidine blue or barium were made in order that the development of the blood vessels might be studied. These experiments with double tubed pedicled skin flaps showed that an adequate blood supply was established from a single pedicle in seven days. The authors conclude that severing of the flap may be begun on the seventh day but that it is safer to delay division until the tenth day.

M. HERBERT BARKER, M.D.

King, D. S.: Postoperative Pulmonary Complications. I. A Statistical Study Based on Two Years Personal Observation. *Surg. Gynec. & Obst.* 1932, 54, 43.

The author presents a statistical study of post operative pulmonary complications based on cases

treated on the General Surgical Service of the Massachusetts General Hospital, Boston, during the years 1930 and 1931.

The study was limited to the complications occurring in the first three or four postoperative days which were manifested by cough, purulent sputum, fever and leucocytosis. Proved cases of pulmonary embolism, exacerbation of pulmonary tuberculosis, and empyema were excluded. The majority of the lesions studied are not true pneumonitis. They run a shorter and less virulent course. Their origin is frequently a purulent bronchitis which may remain limited to the bronchus or give rise to an accompanying "pneumonitis" a condition described by Whipple as a pneumonia with an alveolar exudate lacking fibrin and consequently quite readily absorbed. The causative organisms are of relatively low virulence. Plugging of the bronchus by the exudate has given rise to atelectasis in 47 per cent of the cases. Most of the fatalities were due to true bronchopneumonitis without evidence of atelectasis.

The physical signs of a true bronchial obstruction are dullness, absence of or a decrease in, breath sounds, and a decrease in whispered and tactile fremitus. If the bronchial obstruction is removed while the atelectasis persists the signs are those of consolidation although a true pneumonia may not be present.

After laparotomy and hernioplasty in the cases reviewed the incidence of complications was 14 per cent, whereas after thyroidectomy it was only 7 per cent. After operations on the stomach, gall bladder and bowels it was 40.2, 28.8, and 30.8 per cent respectively.

Chest complications occur twice as frequently in men as in women. The general condition of the patient before the operation and the presence of sepsis, perforation, or malignancy are important factors. In the cases reviewed no seasonal rise in the incidence of complications was noted. The type of anesthesia seemed to be without importance.

EMILE HOLMAY, M.D.

Burgess, A. M., and Burgess, A. M., Jr.: A New Method of Administering Oxygen. Preliminary Notes. *New England J. Med.* 1933, 207, 1497.

For the administration of oxygen the authors use a box constructed of cardboard or wall board which is 20 in. long, 20 in. wide and 10 in. deep. Oxygen is allowed to flow in at a point 6 in. from the bottom of the box. The sides of the box have apertures covered with cellophane acetate through which the patient can be observed at all times. The top of the box is open. The percentage of oxygen at the level of the patient's nose can be maintained between 40 and 50 per cent with a flow of 4 liters per minute. A piece of rubberized cloth which has a circular open-

ing and a collar to fit about the neck and is secured to the side of the box permits the patient to move about without allowing the oxygen to escape.

In the cases of small infants, the child can be placed entirely within a larger box on a pillow and the oxygen maintained at 45 per cent with a flow of 3 liters per minute. WILLIAM J. PICKETT, M.D.

Lubin, M. L. Internal Drainage. *Am J Surg*, 1933, xix, 80.

The early recognition, active treatment, and prevention of pulmonary atelectasis are most important because of the relation of atelectasis to postoperative pneumonia. The development of pneumonia following atelectasis depends upon the duration of the atelectasis and the virulence of the organisms present in the secretions which cause the bronchial occlusion.

Nasal and buccal secretions may enter the trachea and bronchi of normal unanesthetized individuals with an intact cough reflex. These secretions move about with change of posture and may plug various bronchi, thus precipitating atelectasis. Exudate in the bronchi from intrabronchial or pulmonary pathological processes acts in the same manner. Thin secretions enter small bronchi and produce a patchy atelectasis, while viscid secretions plug larger bronchi and tend to collapse entire lobes. Atelectasis may develop while the patient is still on the operating table or at any time during the first five days after operation.

A very rapid development of the atelectasis occurs when the bronchus is plugged in the expiratory phase. When the plugging occurs during an inspiratory phase the air must be absorbed and the signs of the atelectasis appear after from six to twenty-four hours.

The usual symptoms of atelectasis are a rise in temperature, varying degrees of respiratory distress, rapid pulse, and chest pain. Physical examination shows decreased expansion on the involved side with pulling in and narrowing of the intercostal spaces, displacement of the heart toward the collapsed side, and, as a rule, elevation of the diaphragm. The area of collapse is dull, and breath sounds are absent or diminished. Occasionally bronchial breathing is heard.

The physical signs alter frequently from time to time, especially with a change of position and deep breathing. If the offending secretions are not brought up, the atelectasis may appear in a different portion of the lung as the material is shifted about within the bronchial tree by change of position.

Prophylaxis of this postoperative complication is most important. Colds, sinus infections, bronchitis, and faulty mouth hygiene should be carefully treated before operation. Chronic pulmonary infections should be drained by postural treatment or bronchoscopy before operation. A semi-Fowler position on the operating table is hazardous because of the downward internal drainage in the bronchus. The removal of buccal secretions by suction is im-

portant during the operation. Light anesthesia is advisable. Frequent postural changes and carbon dioxide inhalations during the first three postoperative days are important.

The treatment of atelectasis after it has developed consists of (1) postural drainage, (2) hyperventilation, (3) the use of expectorants, (4) inhalations, and (5) bronchoscopy.

Postural drainage is most important and should be carried out with respect to the anatomical relationships of the bronchus which is plugged.

The patient is placed in the position in which the particular bronchus is best drained, allowed to remain there for twenty minutes, and then rolled to the opposite side for a few minutes. Cough and expectoration are encouraged. Frequent postural changes are essential.

In a few cases with very thick, tenacious plugs, bronchoscopy may be necessary. In stubborn cases, swelling of the mucosa or even granulation tissue are found at bronchoscopy and must be cauterized with silver nitrate. These cases may require several bronchoscopic treatments. MARY E. MATHEWS, M.D.

ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Aldrich, R. H. The Role of Infection in Burns. *New England J Med*, 1933, ccviii, 299.

The majority of persons suffering from burns of large areas exhibit symptoms of shock exactly like those of surgical shock. After recovery from the shock they are fairly comfortable for a few hours. However, there will be a concentration of the blood due to the oozing of fluid from the burned area. Even if this fluid is replaced by hypodermoclysis or intravenous injections, other symptoms—stupor or restlessness, fever, pain, nausea, and vomiting—begin about twelve hours after the burn and reach their maximum severity in about seventy-two hours. These symptoms are due to factors other than dehydration. The author discusses and rejects the theory that they are caused by the absorption of toxins of tissue broken down by the heat. On culturing burned areas a few hours after the burning, he obtained pure cultures of beta hemolytic or gamma streptococci and found that the presence of other organisms paralleled the liquefying and putrefying character of the burn and the development of toxemia. He ascribes the systemic toxic symptoms and the frequent nephritis to streptococci.

As a bactericidal agent he uses a 1 per cent solution of gentian violet. This is sprayed on the burned areas every two hours. Besides preventing infection and toxemia, it produces a very excellent tough and flexible eschar similar to that produced by tannic acid. In old burns already infected the same spray is used and softened necrotic areas are excised. The treatment is painless and easy to apply. The good results are due in no small measure to great care to maintain cleanliness. The areas treated are kept uncovered as much as possible.

The author reports four cases of very severe burns in which the treatment described gave excellent results.

G. DUNN, DUNSMITH, M.D.

Mitchiner P. H.: The Treatment of Burns and Scalds with Special Reference to the Use of Tannic Acid. *Lancet* 1933, civiv 933

The author traces the progress of the treatment of burns and scalds during the past forty years. In 1864 the average mortality of burns and scalds was 40 per cent whereas in 1933 the mortality of burns was 4 per cent and that of scalds 17 per cent. An important factor in the reduction has been the use of tannic acid.

In discussing the causes of death from burns the author states that about 5 per cent of the deaths are immediate and due to shock and about 80 per cent are due to loss of blood serum in the first few hours after the injury and acute toxemia caused by the absorption of toxic substances which occurs from six to twenty-four hours after the burn. Tannic acid is effective in stopping the absorption of toxic substances and the loss of blood serum.

The spray method of applying tannic acid has the following disadvantages:

1. The necessity of leaving the area exposed to the air while at the same time keeping it and the patient warm.
2. The mechanical restraint necessary to keep the damaged area at rest and free from interference and irritation.
3. The need for constant attention and spraying every hour for twenty-four hours.
4. The impossibility of spraying and exposing the surfaces when both sides of the body have been burned.
5. The necessity of making a fresh solution every hour.

In the treatment advocated by the author a compress made of six layers of sterile gauze is thoroughly soaked in a 2 per cent stock solution of tannic acid and a 1:5,000 solution of perchloride of mercury and applied closely and evenly over the entire burned area without being wrung out. It is firmly bandaged in position and then soaked again with the same solution. In cases of small burns it is left on and untouched for a fortnight, and in cases of large burns, for three weeks.

NEWMAN C. BULLOCK, M.D.

Burnett W. E.: The Serum Treatment of Gas Gangrene. *Parasitologia M. J.* 934, xxvii, 74.

The author states that the treatment of gas gangrene is primarily surgical. It is divided into (1) the prophylactic, (2) the curative, and (3) the supportive. Second in importance to surgery is the use of polyvalent anaerobic antitoxin. According to modern concepts, the dosage must be determined according to the requirements of the particular case.

Burnett institutes serum therapy at the first suspicion of gas gangrene. He has found that from

1 to 3 doses, from 10,000 to 30,000 units, of polyvalent anaerobic antitoxin, given intravenously every four to six hours produce the most dramatic recovery. This régime is continued until the wound appears healthy, gas bubbles and crepitation are absent, the swelling in the vicinity has receded, the toxemia has subsided and the general condition has greatly improved.

The therapeutic dose of polyvalent anaerobic antitoxin is 30 c.c.m. of concentrated serum or 100 c.c.m. of unconcentrated serum.

The concentrated serum is preferable. In order to avoid severe reactions it should be given with the precautions usually taken in the use of horse serum, the serum should be fresh, sterile, and warm, and the injection should be made slowly. Of six patients receiving therapeutic doses, all except one who died, showed some reaction. Three had severe urticaria and two had mild urticaria. One of those with severe urticaria had joint pains. Two developed dyspnoea while receiving their last injection. These immediate reactions were readily controlled with adrenaline. Of forty-nine patients receiving 10 c.c.m. intramuscularly as prophylactic treatment urticaria developed in about 50 per cent and in many was quite severe.

From his experience and a review of the literature the author concludes that the polyvalent serum given early in sufficient amount and with sufficient frequency by the intravenous route will save life and lessen. He emphasizes that while serum treatment does not supplant surgery it seems to decrease the amount of surgery necessary.

EARL C. ROBERTSON, M.D.

MacNeal, W. J.: The Use of Bacteriophages in Wound Infections and in Bacteriemia. *J. A. M. A.* 1933, civiv 803

MacNeal reviews briefly the nature and clinical applications of bacteriophages. The use of bacteriophages in the treatment of furuncles and carbuncles seems to be on a well-established basis. MacNeal recommends that the staphylococcus phage be introduced into the lymph spaces about the boil through a very fine needle, and that this injection treatment by multiple punctures be repeated after forty-eight hours. He states that infected wounds in which the staphylococcus aureus is found respond well to frequent local applications of dressings wet with the staphylococcus broth bacteriophage filtrate.

Focal sepsis have been successfully treated by the application of large amounts of mixed bacteriophage preparations including phages active against staphylococci, colon bacilli, dysentery bacilli, and the bacillus pyocyaneus.

For bacteriemia of staphylococcal origin, MacNeal recommends local applications together with intravenous injections of the appropriate phage.

In conclusion states that antiseptics, inflammatory exudates, and blood interfere with the efficiency of bacteriophages.

JACOB M. MOON, M.D.

ANÆSTHESIA

Wollesen, J M, and Larsen, K The Action of Avertin on the Parenchyma of the Liver (Die Wirkung des Avertins auf das Leberparenchym) *Hosp-Tid*, 1932, p 987

Avertin, which already in many countries has won first place among the narcotics, can be properly used in all cases in which general narcosis is required. While many of the numerous precautionary measures and contra-indications to which attention was called previously are now disregarded, the appropriateness of administering avertin to patients with liver ailments is still disputed. The authors therefore studied the effect of this narcotic on the liver in the cases of thirteen patients who were operated upon. They used the tributyrin method of Rona and Michaelis. Injury to the parenchyma of the liver can be recognized by an increased discharge of liver lipases into the blood. These lipases are differentiated from other lipases by their resistance to quinine. When quinine and tributyrin are added to the serum, the surface tension of the tributyrin is influenced by the lipases of the liver (measured with a stalagmometer). The changes in the surface tension are manifested by a difference in the number of drops measured with the quick-drop pipette of Rona and Michaelis.

Of the thirteen patients studied, none had clinical symptoms of a liver ailment and all stood the avertin narcosis well. In the cases of twelve of them, the

average number of drops before and after the action of the avertin agreed well, except for insignificant rises, with the average number in the cases of four perfectly normal persons. In the case of one patient there was such a deviation that a liver ailment was assumed.

From these findings it appears evident that the increase in the content of liver lipases in the blood caused by avertin is so slight as to be of no practical importance, and that avertin narcosis does not endanger the function of the liver. HAAGEN (Z)

Minnitt, R J A Successful Treatment for Toxic Symptoms Resulting from Ether Anæsthesia Based on a Biochemical Investigation *Proc Roy Soc Med*, Lond, 1933, xxvi, 347

The author states that during ether anæsthesia the blood sugar rises and the blood pressure falls. These changes occur also in shock. Accordingly, there is some justification for the assumption of a pancreatic hormone deficiency resulting from the ketosis produced by the ether. Postoperative toxic symptoms also develop under such conditions. Thus there seems to be a parallel between the blood changes in diabetes and those occurring in patients suffering from the effects of ether anæsthesia. The author therefore administers insulin to alleviate toxic symptoms and reduce the blood sugar. He states that it may be employed also prophylactically and to raise the blood pressure.

GEORGE R. McAULIFF, M D

The author reports four cases of very severe burns in which the treatment described gave excellent results.

G. DUMAS, DERMAT. M.D.

Mitchiner, P. H.: The Treatment of Burns and Scalds with Special Reference to the Use of Tannic Acid. *Lancet*, 1933, cccxv, 233.

The author traces the progress of the treatment of burns and scalds during the past forty years. In 1891 the average mortality of burns and scalds was 40 per cent whereas in 1932 the mortality of burns was 4 per cent and that of scalds 7 per cent. An important factor in the reduction has been the use of tannic acid.

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NORMAN C. BULLOCK, M.D.

Burnett, W. E.: The Serum Treatment of Gas Gangrene. *Penarthia M. J.* 934, xxxv, 74.

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From his experience and a review of the literature the author concludes that the polyvalent serum given early in sufficient amount and with sufficient frequency by the intravenous route will save life and limbs. He emphasizes that while serum treatment does not supplant surgery it seems to decrease the amount of surgery necessary.

EARL C. ROBERTSON, M.D.

Mecham, W. J.: The Use of Bacteriophages in Wound Infections and in Bacteriemia. *Am. J. M. Sc.* 934, cccxv, 809.

MacNeal reviews briefly the nature and clinical applications of bacteriophages. The use of bacteriophages in the treatment of furuncles and carbuncles seems to be on a well-established basis. MacNeal recommends that the staphylococcus phage be introduced into the lymph spaces about the boil through a very fine needle, and that this injection treatment by multiple punctures be repeated after forty-eight hours. He states that infected wounds in which the staphylococcus aureus is found respond well to frequent local applications of dressings wet with the staphylococcus broth bacteriophage filtrate.

Fatal fistulae have been successfully treated by the application of large amounts of mixed bacteriophage preparations including phages active against staphylococci, colon bacilli, dysentery bacilli, and the bacillus pyocyaneus.

For bacteriemia of staphylococcal origin, MacNeal recommends local applications together with intravenous injections of the appropriate phage.

In conclusion states that antiseptics, inflammatory exudates, and blood interfere with the efficiency of bacteriophages.

JACOB M. MOSE, M.D.

fifty-two cases of cancer—chiefly cases of breast cancer—during the past four years

Its theoretical advantages are based on the theory of Regaud and Ewing that cancer cells actively multiplying are most vulnerable during mitosis and irradiation may be made relatively selective in its action on malignant cells

In the cases reviewed, Mattick employed the usual 200-kv machine and filtration with 3 mm instead of 0.5 mm of copper. When the apparatus was improved, 30 ma were used, a short (thirty-minute) daily treatment being given for fifteen consecutive days—a total of 2,000+ r units without scattering or 3,000+ r units with scattering. The treatment was continued until erythema developed and the usual desquamation and tanning occurred. There was little roentgen sickness.

The author agrees with Schreiner that this method is the most promising suggested to date.

Because of the shorter wave length, the heavily filtered irradiation is less absorbed by the tissues. Hence more can be given before a reaction is brought about in the tissues or damage is caused to the skin. Physical measurements showed that the increased speed due to the increased milliamperage did not lessen the efficiency of the treatment. The author says, "More likely, the total number of days over which these small increments of radiation are delivered is the more important factor." The increase in filter thickness resulted in a perceptible increase in depth dosage. An increase in the skin-target distance up to 80 cm gave an increased depth dose, but beyond that optimum point the relative increase in the depth dose was not the same.

HARRY C. SALTZSTEIN, M.D.

RADIUM

Taussig, L. The Treatment of Epithelioma of the Skin. Indications for Radium Therapy. *Am J Roentgenol*, 1932, xxviii, 721.

Of the methods employed in the treatment of epithelioma of the skin, the most common are (1) surgical removal, (2) thermic destruction, (3) chemical destruction, and (4) irradiation. These methods separately or combined result in the cure of a large percentage of skin malignancies.

Basal-cell epitheliomata are much less malignant than epitheliomata of the squamous-cell type. Early lesions of either type are amenable to successful treatment.

The author treats most skin cancers by curettage followed by electrodesiccation or the use of the actual cautery under novocain anesthesia. The advantages are summarized as follows:

1. Material is secured for microscopic diagnosis.
2. The curette indicates clearly the extent of the involvement.

3. The cautery completes the destruction of the remaining neoplastic tissue.

In the treatment of small lesions, trichloroacetic acid may be employed as the cauterizing agent.

The chief objection to this form of therapy is the occasional production of a hypertrophic scar.

Contrary to the early trend, radium irradiation has not supplanted all other forms of treatment. One reason is the radioresistance of squamous-cell lesions as compared with basal-cell lesions. Another is that if the growth recurs further irradiation may result in scarring and telangiectasis. A third is that if cartilage and bone are involved irradiation seems to result in painful reactions and intractable ulcerations.

The author is of the opinion that in cases of involvement of the eyelids radium irradiation is the method of choice. Any one of several methods may be used, but the maximum dose should be delivered at one time in one treatment. If this treatment is unsuccessful it should not be repeated. The irradiation may be given with a plaque or a tube of radium or radon or by the intratumoral application of seeds or needles. Radium irradiation is the method of choice also for untreated basal-cell lesions of the face. A moderately screened surface irradiation is usually indicated. The author recommends the use of one tube for each square centimeter of tissue with 0.5 mm of silver and from 40 to 60 mc-hrs of irradiation per square centimeter. Basal-cell lesions in old and debilitated patients who object to operative procedures may also be treated with radium.

Postoperative irradiation of skin malignancies would seem to be a logical procedure on purely theoretical grounds. It tends to prevent the formation of hypertrophic scarring which is an unfavorable sequela of the curette and cautery methods, and may be expected to decrease the incidence of recurrence.

The author concludes that although radium irradiation is not the treatment of choice for the majority of skin malignancies, it is indicated for unirradiated epitheliomata of the eyelids, unirradiated basal-cell lesions of the face where good cosmetic results are desired, and malignant lesions of the skin of elderly and debilitated persons. It is of value also as postoperative treatment in conjunction with some other therapeutic measure.

A. JAMES LARSEN, M.D.

Berven, E. G. E. The Development of Technique and the Results of Treatment of Tumors of the Oral and Nasal Cavities. *Am J Roentgenol*, 1932, xxviii, 331.

The treatment of tumors of the upper alimentary tract and the air passages has always been difficult. The factors responsible are (1) the difficulty of making an early diagnosis, (2) the high degree of malignancy of the tumors, (3) the occurrence of early disintegration and septic secondary infection, (4) early invasion of bone and cartilage, (5) an early effect on the patient's condition, (6) the failure of surgical intervention, (7) the low degree of radiosensitivity of the tumor cells, and (8) the high degree of radiosensitivity of the surrounding tissues.

PHYSICO-CHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Knutson, F.: Roentgenological Demonstration of the Normal Parietal Pleura (Zur Kenntnis der normalen Roentgenologie der Pleura parietalis). *Acta radiol.* 1933 xiii, 638.

The companion shadow of the second rib has been known since Albert Schoenberg's time. If it extended no farther than the second rib and, in the lateral part of the thoracic wall, down to the third and fourth ribs at the farthest, no pathological significance was attached to it. In any other locality the presence of similar companion shadows was considered to indicate pleurisy (*Fleischner*).

The author explains in detail how in the posterior part of the thoracic wall, the internal surfaces of the ribs are to a great extent covered with musculature, partly overlying subcostal muscles, partly a more or less fleshy internal lining. This muscular layer thus interposes itself between the rib surfaces and the lung, and by roentgenographing prepared specimens from the thorax, obtained by section after death, he has shown how it reveals itself as a narrow soft-tissue shadow along the inner side of the thoracic wall. He suggests for this shadow the term "inner muscle shadow of the chest wall."

In the lateral part of the thoracic wall the fleshy lining of the internal surface of the ribs disappears, leaving this and the anterior portion of the inner rib surfaces bare. In consequence, the inner muscle shadow of the chest wall appears only when the subject is turned in such a way that the posterior parts of the thoracic wall are brought into projection tangentially. Downward, it can then be followed as far as one of the nethermost intercostal spaces, where it disappears. In contrast to a pleuritic companion shadow it does not cause any alteration of the striae. In the upper part of the pulmonary field, on the other hand, it can be visualized even in frontal projection, without turning the subject, and it is this part of the inner muscle shadow of the chest wall which is called the companion shadow of the second rib. All of this accords with the fact that the muscular covering of the internal rib surfaces extends farther toward the front in the upper lateral part of the thoracic wall than in the lower part of the thorax. The lateral portion of the companion shadow of the second rib, which medially may be reckoned as extending to about the angle of the rib, thus becomes a part of the inner muscle shadow of the chest wall and is consequently of the same muscular character as the latter as a whole. The medial portion of the companion shadow of the second rib, on the other hand, must have a different anatomical basis because we know that inside the angle of the rib both internal

and subcostal muscles are lacking. The shadow here is caused by a sheet of connective tissue normally interposed between the posterior part of the costal pleura and the first, and to a certain extent also the second, rib. In this interspace are situated the last cervical ganglion of the sympathetic, the superior thoracic artery and vein, and the large branch of the first thoracic nerve which ascends over the neck of the first rib to join the brachial plexus. In ventrodorsal caudocranial projection, with the apex of the lung projected through the first intercostal space, this same sheet of connective tissue produces a similar companion shadow of the first rib.

The density and extent of the normal inner chest wall shadow varies according to the greater and lesser heaviness of the muscular lining. In each individual case it increases in density both toward the spine and upward, exactly according to the muscular development. Moreover its appearance on the right and left side is absolutely symmetrical.

To avoid the erroneous interpretation of the inner muscle shadow of the chest wall as the indication of a pathological change it is of course absolutely necessary to know the possible limits of its extent. The supposition of a pleural thickening (smaller pleurisy) is justified only in cases in which an inner chest-wall shadow is found beyond those limits or where some distinct asymmetry is found as regards either the extent or the density of the shadow.

The author calls attention to the fact that both in the normal muscle shadow of the chest wall and, in cases of pleural thickening, the marginal zone as a rule appears denser than the rest of the shadow. He gives his reasons for concluding that this is due to an optical illusion (Mach). He therefore refuses to see in this phenomenon any indication of clinical value although Schoenfeld regards it as pathognomonic of pleurisy. Only in exceptional cases does he admit the possibility of an additional anatomical basis for this greater density of the marginal zone, namely a tendinous endothoracic fascia or an abnormally heavy consistency toward the surface of either the fibrous deposits or the pleural linings.

Matlack, W. L.: Heavily Filtered High-Voltage X Irradiation in Cancer Therapy: Protracted Treatment. *J. Am. M. Ass.* 93, 222, 237.

At the present time four types of X-ray therapy are used for cancer: (1) the massive dose, (2) the divided dosage, (3) the saturation dosage, and (4) the more recent fractionated, heavily filtered roentgen irradiation given daily for fifteen or more days, which is called the "protracted dose."

At the State Institute for Malignant Diseases at Buffalo Matlack has used the protracted dose in

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Roome, N W, Keith, W S, and Phemister, D B
Experimental Shock. The Effect of Bleeding
After Reduction of the Blood Pressure by Various Methods *Surg, Gynec & Obst*, 1933, lvi, 161

From experiments on dogs the authors draw the following conclusions

1 In states of circulatory depression the blood pressure is an adequate index of the seriousness of the condition

2 In conditions of lowered blood pressure due to vasodilator mechanisms, such as spinal anesthesia, and presumably also the fall of blood pressure which sometimes occurs with slowing of the pulse in operations performed on the upper part of the abdomen in man, operation and loss of blood are well tolerated as the volume of circulating blood is not seriously diminished.

3 When the blood pressure is reduced by hemorrhage, experimental trauma to the extremities, or experimental manipulation of the intestine, the volume of circulating blood is markedly diminished and the animal is much less able to withstand further hemorrhage or an operation than if the blood pressure were depressed to a similar degree by a vasodilator mechanism

4 The effects of experimental trauma and intestinal manipulation on the blood pressure are due to local loss of fluid rather than to toxemia

SAMUEL KAHN, M D

Jones, H W, and Tocantins, L The Treatment of Purpura Hemorrhagica *J Am M Ass*, 1933, c, 83

From a study of fifty-three cases of purpura hemorrhagica the authors conclude that spontaneous cures are frequent. They believe that the acute progressive case is best treated by small intravenous transfusions frequently administered. More attention should be paid to the bleeding time than to the platelet count. To prevent recurrence of the hemorrhagic phenomena and possible intracranial hemorrhage it is imperative to keep the bleeding time under control. Infectious processes should be eliminated and the patient placed on a diet with a high protein and vitamin content. Viosterol and iron should be given by mouth, and ultraviolet-ray treatment and outdoor life instituted.

Failure of such treatment may be due to too large transfusions, improperly administered transfusions, too long an interval between transfusions, or an insufficient number of transfusions.

When the patient fails to respond to the measures mentioned, splenectomy or ligation of the splenic

artery should be done after proper preparation by transfusion. Patients with a normal blood count, a low platelet count, and a long bleeding time who are in the subacute or chronic stage are best treated by ligation of the splenic artery or removal of the spleen.

The authors believe that the methods of treatment suggested are not specific, and that purpura hemorrhagica may be a deficiency disease occurring in individuals with a so-called hemorrhagic constitution, the acute phase of which is activated by a toxin or toxin substance affecting the permeability of the capillaries. They are of the opinion that in the not distant future the treatment will be so simplified that it will resemble the treatment now used in pernicious anemia, the two diseases having many points of similarity.

JACOB M. MORA, M D

Lichtenstein, A Agranulocytosis (Agranulocytose) *Acta med Scand*, 1932, Supp. clx

This monograph is 136 pages long and has a bibliography of 265 references.

A complete review of agranulocytosis is given and various points are emphasized by the author's series of twenty-seven cases. In the introduction it is suggested that a better understanding of the disease would be obtained if the two forms, a primary or "pure" form and a secondary or symptomatic form, were considered separately. Attention is called to the fact that patients often complain of weakness and fatigue before the onset of the attack. The author cites cases reported in the literature in which the agranulocytosis preceded the fever or angina. This is evidence of the existence of a primary form of the disease.

The symptoms of agranulocytosis are reviewed on the basis of the literature. Of seventeen of the author's cases in which the leucocyte count decreased to below 1,000 per cubic millimeter, 13 were fatal. The lower leucocyte counts followed by recovery were 500 and 640 per cubic millimeter. Eosinophiles were always absent at the height of the disease. The monocyte count is also of importance in the prognosis. If it is high at the beginning of treatment or if it increases during the treatment, the prognosis is more favorable. The prognosis is favorable when the absolute monocyte count is not less than from 100 to 200 per cubic millimeter. The appearance of monocytes during improvement is followed shortly by the appearance of immature granulocytes and later by the appearance of mature granulocytes in the peripheral blood. This was observed after treatment by X-ray irradiation. The sedimentation time is markedly increased in agranulocytosis. In all but one of his cases coming to autopsy the author found

The treatment now employed at Radiumhemmet, where the author is clinical director, is a combination of irradiation and endothermy. Radium is regarded as superior to any X-rays now available.

The treatment of the primary tumor consists routinely of an initial telerradium treatment. The telerradium apparatus contains 3 gm. of radium and the filter is equivalent to 5 mm. of lead with a protection for the surrounding tissues of from 2.5 to 6 cm. of lead. As soon as the primary tumor has become clean, smaller and better delimited, the initial radium treatment is followed by endothermy and the simultaneous implantation of radium needles around the coagulated area.

The treatment of the lymph nodes consists in application of the telerradium simultaneously with

the treatment of the primary tumor. If any easily movable glandular metastases remain after the telerradium, they are removed surgically.

Of 278 patients treated for carcinoma of the oral cavity (tongue, sublingual region, cheek, or mandible), 75 (27 per cent) have been free from symptoms for from five to eleven years. Of 18 patients treated for epithelioma of the tonsils, 7 (39 per cent) have been free from symptoms for three years or more. Of 35 patients treated for sarcoma of the tonsils, 13 (43 per cent) have been well for three years or more and 38 per cent for five years or more. Of 64 patients treated for carcinoma of the upper jaw, 22 (36 per cent) have been free from symptoms for from one to eight years.

CHARLES H. HENCKES, M.D.

The most striking effect of removal of the thyroid was not so much a decrease of activity as a state of instability with extraordinary fluctuations which in some instances appeared in regular cycles.

When thyroid was fed in large doses (from 1 to $1\frac{1}{2}$ gr), activity nearly ceased, but when only from $\frac{1}{10}$ to $\frac{1}{8}$ gr per kilogram of body weight was fed, activity again became normal. The extract also smoothed out the cyclical changes and maintained activity at a more constant level.

After thyroidectomy the body weight became stationary or decreased. Small doses of thyroid brought it again to normal, but large doses caused it to decrease further.

The food intake was definitely lessened and rendered irregular by thyroidectomy. Small doses of thyroid increased it to normal, and large doses caused an excessive food intake.

The water intake was less definitely influenced than the food intake by thyroidectomy, but showed a general tendency to decrease. Large doses of thyroid caused a definite increase, and, in some of the animals, small doses caused a decrease.

Normal female rats showed a marked regularity in fluctuations of activity coinciding with the reproductive cycle. Thyroidectomy and large doses of thyroid obliterated this regularity, and small doses re-established it.

The author suggests that the thyroid is less concerned with total bodily activity than the pituitary gland, the adrenals, or the gonads. He concludes, however, that the appearance of marked irregularity together with cyclical fluctuations after thyroidectomy indicates that the thyroid acts as a regulator and that when it is removed the cycle of some other gland becomes dominant. In support of this theory he cites analogous observations made in the cases of insane persons with myxœdema.

F S MODERN, M D

SURGICAL PATHOLOGY AND DIAGNOSIS

Harter, J S, and Lyons, C. *Surgical Applications of the Schilling Differential Blood Count*. *Surg, Gynec & Obst*, 1933, 171, 182.

The authors draw the following conclusions:

- 1 The Schilling differential count is readily adaptable in routine laboratory usage to replace the Ehrlich differential blood count.
- 2 It is of more value than the Ehrlich differential count in detecting the presence, degree, and persistence of infection.
- 3 The Schilling hæmogram is the simplest classification of neutrophils giving an adequate picture of the bone-marrow response to infection.

SAMUEL KAHN, M D

a more or less marked decrease in the granulocytes in the bone marrow

In the differential diagnosis such conditions as malignant diphtheria, Vincent's angina, infectious mononucleosis, and aleukemic leukemia must be considered. The author states that in aleukemic leukemia pathological lymphocytes, usually of the large type, are numerous, whereas in agranulocytosis small lymphocytes are usually found.

In the consideration of treatment it is stated that blood transfusions and salvarsan have not proved of any definite value. In seventeen of the cases reviewed X-ray therapy was used. Definite improvement was noted during only five attacks, three of which occurred in the same patient. Despite these results the author considers X-ray irradiation the best treatment available. No mention is made of treatment with nucleotide or adenine sulphate. All but six of the author's cases were fatal.

Lichtenstein reviews the literature on animal experimentation chiefly from the standpoint of infection. He produced leucopenia in rabbits by injecting various kinds of bacteria and found that the degree of the leucopenia was dependent on both the virulence of the organisms and the number injected.

The last chapter includes a detailed discussion of the nature of the disease. According to one theory agranulocytosis is an atypical response to an infectious process, while according to another it is a disease entity in which the infectious phenomena are secondary. The author leans toward the latter.

A review of the records at the Epidemikrankenhaus in Stockholm for the period from 1916 to 1925 revealed five cases of a condition which the author believes might have been agranulocytosis although no blood studies were available. Since 1926, twenty-six cases have been collected from the records of this same institution.

In Lichtenstein's opinion, the most appropriate name for the condition is "malignant granulocytopenia."

HOWARD L. ALT, M.D.

Griffiths M., and Ferguson, F. R.: *Migraine*. *Lancet*, 1933, *ccxviii* 124, 51.

The authors regard migraine as a vasomotor manifestation associated with spasm of the cerebral arteries—most commonly branches of the internal carotid—due to stimulation of sympathetic fibers by direct pressure or through the endocrine system in persons with a migrainous constitution. They believe it is precipitated by factors related to the metabolism, alimentary tract, eye, or uterus.

Successful treatment depends upon proper classification of the particular case. Therefore the examination of the patient should include a careful determination of the previous and family history, a physical and psychological examination, careful testing for ocular abnormalities, roentgenological examination of the sinuses, sella turcica, gall bladder and gastro-intestinal tract, full examination of the cerebrospinal fluid, including pressure readings, biochemical investigations, including determina-

tions of the sugar content of the blood, urinalysis, and determinations of the alkali reserve and a study of the basal metabolic rate.

For very severe cases in which medical treatment is without result, the authors advise a right subtemporal decompression. Holmes is quoted as stating that he had never known migraines to persist in a patient who had had a surgical or traumatic decompression.

HOWARD A. McKENNETT, M.D.

GENERAL BACTERIAL, PROTOZOAN AND PARASITIC INFECTIONS

Ross, J. R., Robertson, E. C., and Tisdell, F. F.: The Effect of Sunshine Through Window Glass and Fresh Air on Resistance to Infection. Experiments on Animals. *Am. J. Dis. Child* 1933, *xiv* 81.

In experiments on white rats which were given a modified Steenbock rachitogenic diet it was found that fresh air and sunshine filtered through ordinary window glass definitely increased resistance to infection by the bacillus enteritidis although they did not have an antirachitic effect. The beneficial effect of exposure to fresh air alone was about half that of exposure to both fresh air and filtered sunshine. The increased resistance to infection indicates that vital irradiations from the sun should not be limited to the narrow band in the short ultraviolet region.

WILLIAM E. SEACRESTON, M.D.

DUCTLESS GLANDS

Richter, C. P.: The Role Played by the Thyroid Gland in the Production of Gross Body Activity. *Endocrinology*, 1933, *xvii*, 73.

The clinical impression that hyperactivity of the thyroid is associated with an increase, and hypothyroidism with a decrease, of total physical activity has not been proved by previous experimental investigations. Richter therefore carried out experiments on rats in which he repeated both the thyroid-ectomy and thyroid-feeding experiments and studied the changes in the water and food intake, body weight, and sex-gland activity.

Rats from thirty to forty days old were used. They were placed in small cages provided with revolving drums for running. Records of the food and water intake and the running activity and vaginal smears were made daily. Rats of this age are less active than adults, a plateau being reached at the age of from sixty to ninety days. Thyroidectomy was done before or after this plateau had been reached and before full growth had been attained. All of the animals were subjected to necropsy and examined for remaining thyroid tissue. For thyroid feeding, the desiccated substance was mixed with the food. From 1/10 to 6 1/4 gr. of thyroid substance were given per kilogram of body weight.

After thyroidectomy some of the animals showed no change in activity others a moderate but definite decrease, and one female a sharp decrease.

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